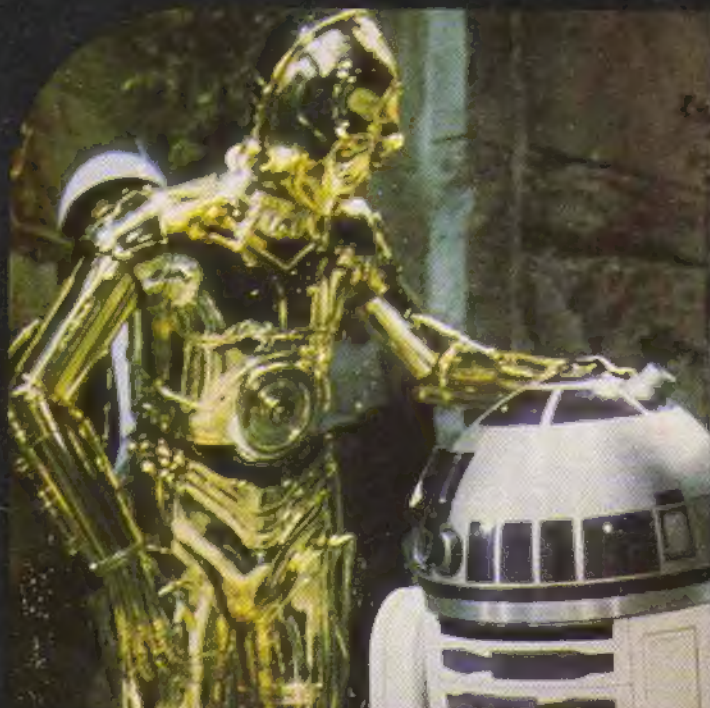
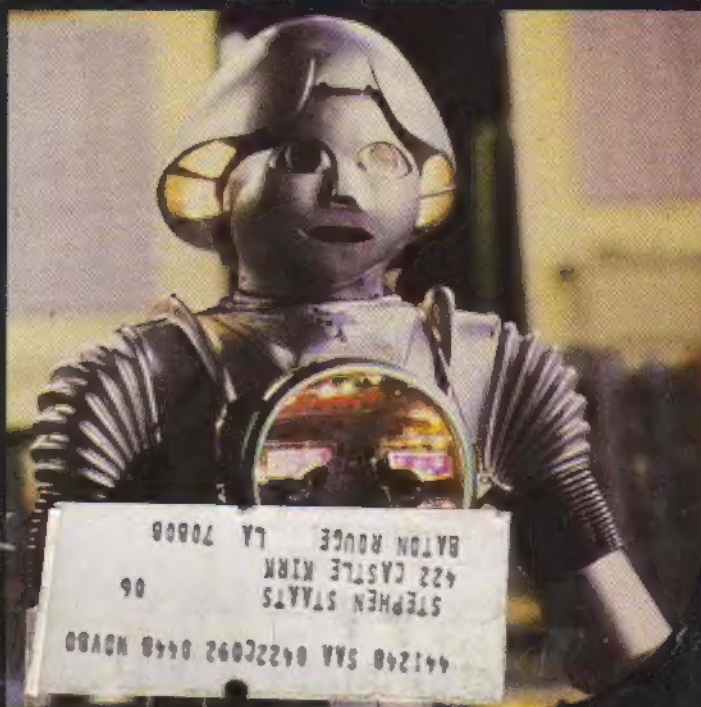


321 CONTACT™

Star Wars Strikes Back! Meet the Man inside C3PO



Inside:
Talk to Your
TV Set!
The Robot
Hall of Fame
Animal Cards
Much More!





They're Back!

That dynamic duo, Artoo-Detoo and See-Threepio, have returned in an exciting new 'Star Wars' movie. It's called 'The Empire Strikes Back.' You can find out more about their new adventures on page four. After you do, turn to page 19. There you'll meet their metal friends in the Robot Hall of Fame.

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Page 4



Page 10



Page 23



Page 24



Page 27



Page 37



Page 42



321 CONTACT

Featuring This Month

- 4** Star Wars Strikes Back!: Meet the Man inside C3PO
- 8** Real Life Robots: They're Not Cute, but They Work
- 19** The Robot Hall of Fame: The Best of the Movie Machines
- 34** Talk Back to Your TV

Plus Our Regular Departments

- 10** Busy Bodies: Eyes
- 14** List of the Month: Ocean Wonders
- 16** Contact Report
- 18** Do It!
- 23** Earthdays: August
- 24** Earthdays: July
- 27** Timeline: Kites
- 30** Experiment: Eye Fooled You
- 32** Reviews and Previews
- 37** Pocket Zoo: Animals of the Amazon
- 40** Any Questions
- 42** Factoids
- 44** Mail
- 46** Did It!
- 47** Skywatch: Saturn

STAR WARS STRIKES BACK!



Above: Storm Troopers do Vader's dirty work.



Above: Han Solo rides into the new 'Star Wars' on an ice planet animal, the tauntaun.

Right: Darth Vader leads the forces of evil in 'The Empire Strikes Back.'



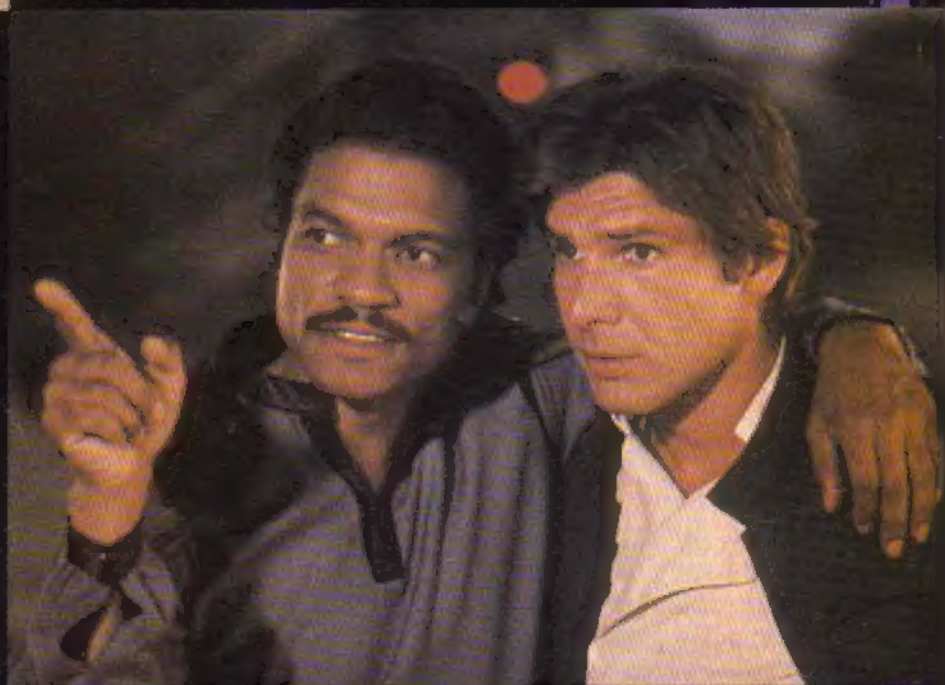


Above: Empire storm troopers load their laser cannons. The rebels of the first movie—Luke, Han Solo, Princess Leia and friends—find themselves under attack.

Above: Luke Skywalker returns—in a new uniform—in 'Empire.' He is played by Mark Hamill.



Above: Chewbacca, the Wookiee monster, returns in the new movie.



Above: Han Solo is joined by a new friend in 'Empire.' He is Lando Calrissian, played by actor Billy Dee Williams.

MEET THE MAN INSIDE C3PO

By Pat Glossop

Tony Daniels is famous—but no one knows who he is. Tony was one of the biggest stars in *Star Wars*. He plays a big part in the new *Star Wars* movie, *The Empire Strikes Back*. But if he came right up to you and shook your hand, you wouldn't recognize him.

Tony just isn't a star without his costume. You see, See-Threepio without his golden robot look is no Threepio at all. And 33-year old Tony is the man inside Threepio.

How to Become a Robot

"It's not easy being a robot," Tony says. Turning Tony into Threepio for the first *Star Wars* movie took a lot of work. First, the costume had to be made. A plaster cast was made of Tony's body. To do this, he was covered with vaseline, sandwich wrap, strips of rubber and plastic.

"Revolting!" Tony remembers. "We ended up with the most horrible, wrinkled, bald copy of me. It looked like a nightmare!"

Five months later, the costume was ready. It looked beautiful. But inside, it hurt! The material had shrunk and become too tight. There were sharp edges that pinched Tony. The costume weighed 60 pounds and took two hours to put on! Besides all that, it was very hot inside.

So before Tony agreed to be in *The Empire Strikes Back*, he asked for and got a new costume. The new Threepio outfit will look the same to you. But it goes on in ten minutes. It's also lighter and easier for Tony to wear.

Life With Threepio

Even with his new costume, filming *Empire* was hard work for Tony. The new costume was still hot inside. He had to take it off after every scene. It was also too heavy to walk in, so he was wheeled from place to place by stagehands. And since he could only turn his head a little bit when in costume, Tony had trouble seeing things.

At least you'd think Tony had a pal to work



Above: Tony Daniels is the man inside C3PO. The 33-year-old English actor says, "It's not easy being a robot."

with in Kenny Baker, the tiny guy inside Artoo-Detoo. But it wasn't that simple. The Artoo usually used in the movie was a radio-controlled machine. Kenny Baker only climbed inside for difficult scenes. So in shots with Artoo, Tony was often talking to himself. He would just say his lines, then leave room for Artoo's answer to be beeped in later.

After the movie was filmed, there was more work to do. The costume made it hard for people to hear Tony clearly. So he had to go to a sound studio after the shooting was over. There, he tape recorded all his lines again. Then Ben Burtt, the man who made up Artoo's language, went to work. He made Tony's voice sound more like a robot. And that's the voice you hear in the movie.

A Scientific Actor

Tony has been an actor for seven years. He has been in stage plays and some English movies. He never liked science fiction before he got to work on Star Wars. But he liked science as a kid. His father was an industrial scientist. When Tony was 12, Mr. Daniels built him a laboratory in their backyard.

"I liked doing exciting experiments," Tony remembers, "like making smoke or beautiful crystals. But I always knew I'd be an actor someday."

Threepio Meets the Machines

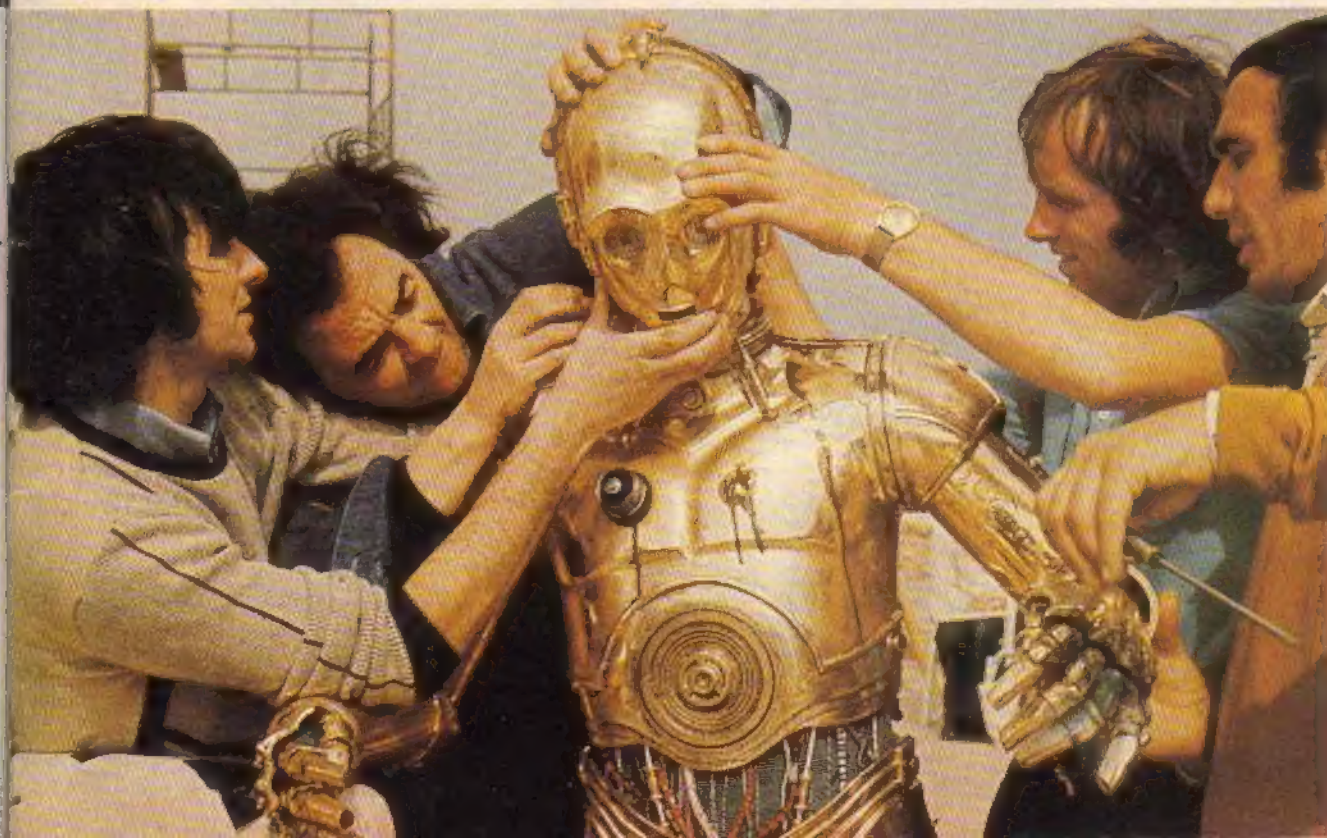
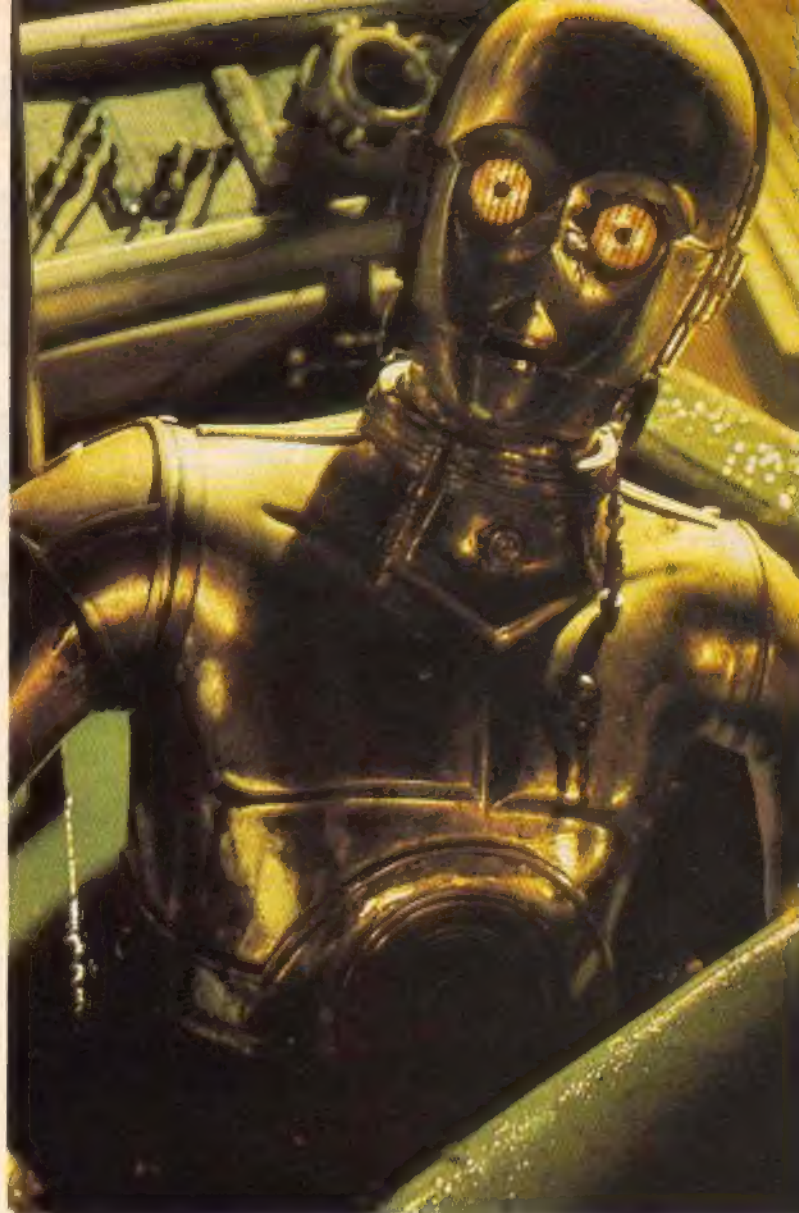
Since Star Wars opened in 1977, Tony has been very busy. Threepio, of course, gets most of the invitations. Once, he opened a computer show in London. "There were machines there that could do things better than I could!" Tony admits. "One of them even corrected my spelling!"

The only other robot he met in real life was called 2T2. "There aren't many robots in the streets of London these days," Tony says.

There are some other robots in Empire. Since Threepio is chief translator, he spends some time in the movie speaking with them. "But it's a lonely life being a machine," Tony says. "People often forget you're in there."

Right: Threepio relaxes in an oil bath. Inside the costume, Tony Daniels was sometimes so hot he nearly fainted.

Below: Tony has a new costume. It only takes ten minutes to put on!



Real Life Robots

By Douglas Colligan

They're Not Cute but They Work

Star Wars made movie superstars out of Artoo-Detoo and See-Threepio. But you may not realize that robots aren't science fiction anymore. At this very minute, there are dozens of real robots at work all over the United States. Some work in office buildings, while others may have built the car you ride in. There are even robots that teach kids in school!

What is a robot? It's more than a machine. Machines usually need a person to work them. But robots work even when people aren't around. They even make decisions on their own. Sounds like science fiction? Well, see for yourself. Here are the stories of three real-life robots.

Chauncey Delivers the Mail

At an office in New York City, Chauncey picks up the mail every day. Most workers don't pay too much attention. Visitors are amazed, though—because Chauncey is a four foot tall, 700-pound robot. He looks like a book rack on wheels, but Chauncey is really very intelligent.

Chauncey moves by himself along the office floor. He never gets lost, because he has a special set of eyes underneath his body. He uses these eyes to follow an invisible trail of chemicals sprayed on the floor.

Chauncey is a polite and careful robot. As he moves, he blinks a blue light and gives a soft warning beep to tell people he is coming. If a not-too-smart human gets in the way, Chauncey stops and waits until the person moves by.

At the end of the day, Chauncey backs himself into an electrical outlet. There, someone plugs him in to recharge his batteries. The next day, Chauncey is ready to roll again.

One-Armed Workers

What has one arm, can lift hundreds of pounds of weight, and never gets sick or tired?

The answer is "a factory robot." In a few American car factories, there are now dozens of

these machines at work. They do the kind of jobs that people find most boring or dangerous.

For example: you may have heard about people working together on an *assembly line*. Cars are put together by groups of workers, each of whom does a small job. Well, there are now assembly lines made up just of robots!

The assembly-line robots can help each other. One robot holds a car piece in place while another attaches it. At the end of the line, their work is checked—by another robot!

Leachim Teaches Classes

Then there is the robot that went to school. Robot expert Michael Freeman's wife is a teacher. She told him she needed help with her fourth grade class. So, Dr. Freeman did something simple—he built her an assistant to help teach the kids.

The assistant was a very big—six feet tall, 200 pounds—very smart robot he called Leachim (the name is something close to Michael spelled backwards).

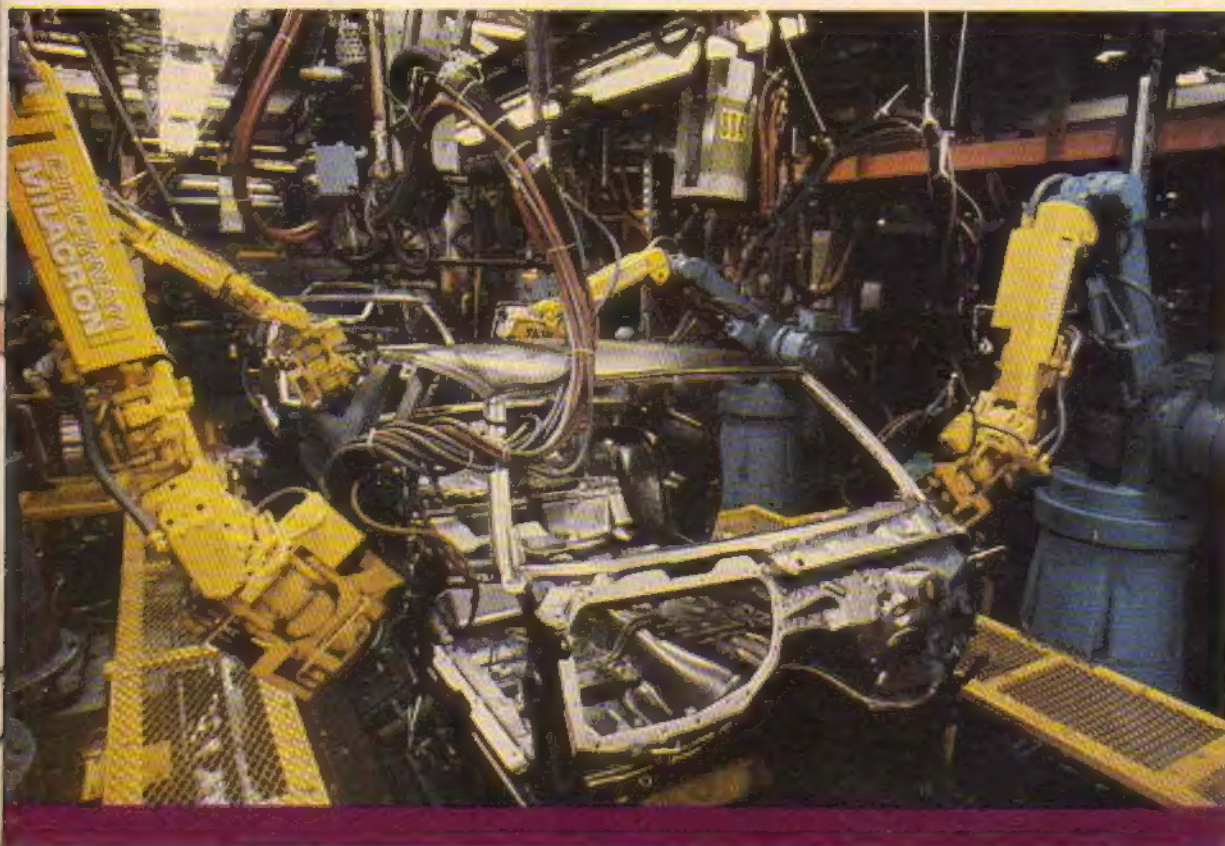
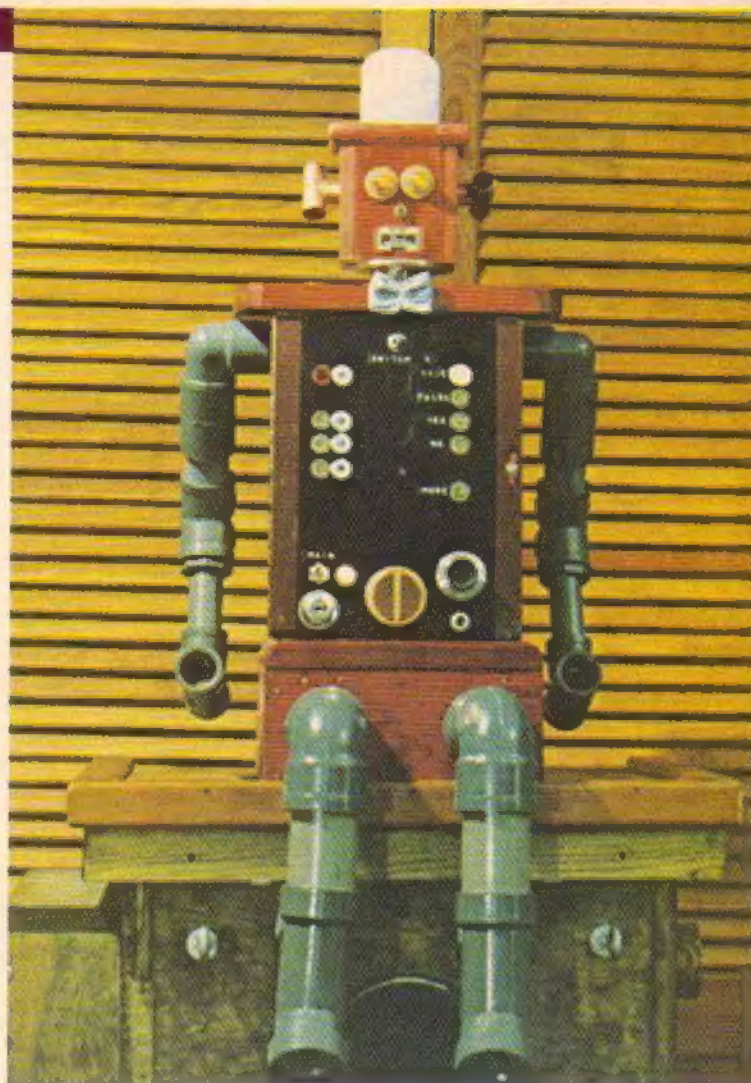
Leachim had a wooden body, light-bulb eyes and an amazing memory. He knew every student's name and what their best and worst subjects were. He talked to the students, by name, through a set of earphones.

Leachim's electronic brain had memorized everything in a dictionary, an encyclopedia, and the Guinness Book of World Records. He knew a few songs, some tricky chess moves, and even a couple of corny old jokes.

Now Dr. Freeman has made a toy-sized version of Leachim. You may have seen it in some toy and department stores. It is named 2-XL. It asks and answers questions, tells jokes, and gives out information. It's not really a robot, because it simply works on tapes. It's also not as complicated as Leachim. But 2-XL is now helping kids all over the U.S.A.



Above: Chauncey brings mail to workers in one New York City office. He has special "eyes" beneath his body. They guide him along an invisible trail of chemicals on the floor.



Above: This is one of Michael Freeman's robots. It is a big version of 2-XL, the toy that answers questions and tells jokes.

Left: Robot workers often do jobs that are dangerous or boring for people. These yellow-armed robots are helping to put together a car.

The Eye

by Jonathan Schwartz

The best way to find out where you are is to open your eyes and take a look. If you want to know what's on TV, you take a look. One of the best ways to learn about anything is by using your eyes.

Meet Your Eyes

Take a peek at your eyes. See the black spot in the center? That's your pupil. It's really a hole in your eye that lets in light.

Around the pupil is a circle of color. In most people it's brown, though it can be blue, too. This is your iris (EYE-riss). The iris works with your pupil to make sure the right amount of light gets into your eye. Too much or too little light and you can't see a thing.

Oh Say Can You See?

How can you see if there is a car coming when you are about to cross the street? Of course, you look both ways. But how do your eyes actually see the car?

Below: A picture is focused on the back wall of your eye. Rods and cones send a message to your brain, which turns the picture right-side up.

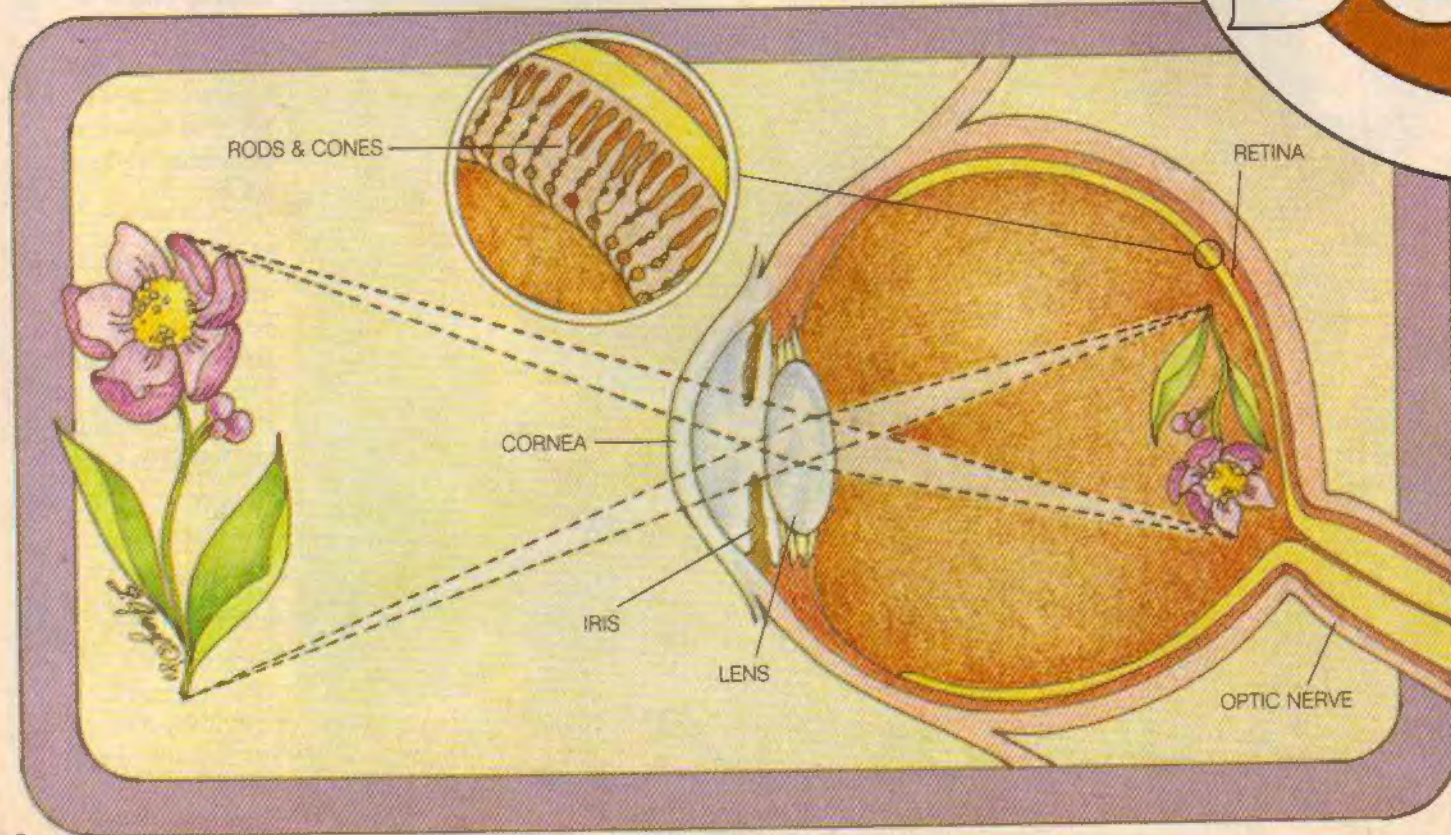
First you need light. During the day, this comes from the sun. At night it might come from the moon or a street light. When the light hits a car (or anything else), some of it bounces off. This light reaches your eye and enters through your pupil.

Now the light reaches the lens in your eye. The lens focuses the light so that you will see clearly. In the same way a camera lens has to be focused just right, so must your lenses. This is done by muscles in the eye. The muscles are constantly focusing and refocusing your eyes—as many as 100,000 times a day!

The light from the car is focused on the back of your eyeball. This part of your eye is called the retina. The retina is covered with cells, called rods and cones. These special cells react to light. When light touches them, they send a message along the optic nerve to your brain.

There's just one little problem. When your lens focuses a picture on the retina, it turns it upside-down! Lucky for you your brain is no dummy. It turns the picture right-side up and you see that car coming down the road.

BUSY BO



Roses are Red, Some Eyes are Blue

All right, why do some people have blue eyes, while others have brown? It all has to do with your parents. They gave you genes. These are tiny chemical messengers that tell your body how to grow. Your parents got their genes from their parents. This is called *heredity*.

Though your parents' genes give you eye color, you may still have different eye color than they do. Most people have brown eyes. But many have blue ones. Some even have hazel, green or (would you believe) violet eyes?

The Color You See

If you can see that your eyes are blue or brown, that means your eyes can see different colors. Remember we said you have special cells called rods and cones that help you see? The rods are for brightness. They see how light or dark something is. Your cones are for color. They are what tells your brain that a banana is yellow and that Godzilla is green.

Some people can't see colors well. They are *color blind*. To these people, red and green often look like the same color. Like people's eye color, this is also caused by heredity.

dies

Here's Mud In Your Eye

There's a lot that can go wrong with your eyes. Lucky for you there are plenty of ways to protect them. Your eyebrows and eyelashes keep dust from getting into your eyes. Your eyelids also protect your eyes from bright sun or blowing dust.

If anything does get into your eyes, tears will usually wash it away. Glands near your eyes are producing tears all the time. You need them to keep your eyes from drying out. Every time you blink, your eyelids wipe tears over your eyes. These tears also wash away dirt.

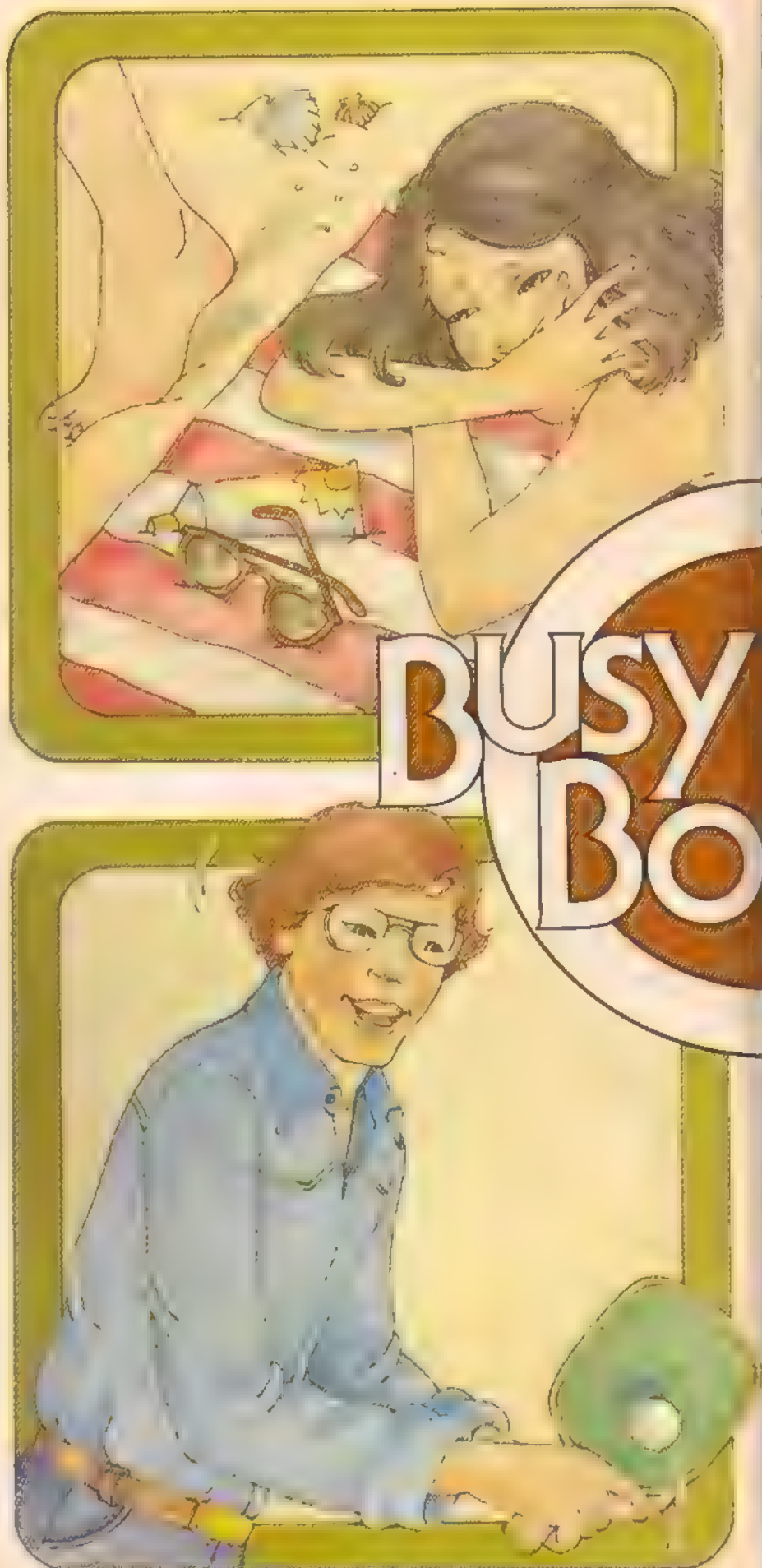
After tears wash your eye, they leave through a tiny hole in the corner of your eye. You can see this in a mirror. The hole carries the tears into your nose. Usually you don't notice this at all. But when you cry, all that extra water makes your nose start to run.

Sight for Sore Eyes

Your eyes are pretty amazing. In an instant they can switch from looking at something a few inches away and read that sign across the street. They do this by changing the shape of the lens. Near or far, the light can then be focused on just the right spot on your retina.

Not everybody's eyes work perfectly. Sometimes lenses don't focus the picture right at the retina. When this happens, what you see is a little blurry. You guessed it. You need glasses.

People who are near-sighted have trouble seeing things far away. The lenses in their eyes focus pictures in front of the retina. People who are far-sighted have the opposite problem. Their lenses focus pictures behind the retina. All a pair of glasses does is change where a picture is being focused by making it land right on the retina where it belongs. Suddenly everything looks crystal clear.



Eye Tests

1. Your eyes are connected to your brain by the optic nerves. Where the nerve is attached to your brain, there are no rods or cones. These places are called "blind spots." Even though light shines on them, you can't see anything at these spots.

You will understand this better if you find your own blind spot. Hold this page at arm's length in front of you. Close your left eye. Now stare at the star with your right eye. Move the page towards you very slowly. Keep staring at the star. At one spot, you will notice out of the corner of your eye that the dot has disappeared. You have just found your blind spot! If you don't find your blind spot the first time, keep experimenting.

2. Can you see your iris at work? Yes, you can! Stand very close to a mirror. Turn off the lights. Now look yourself in the eyes and turn on the lights. Your pupils seem to be getting smaller!

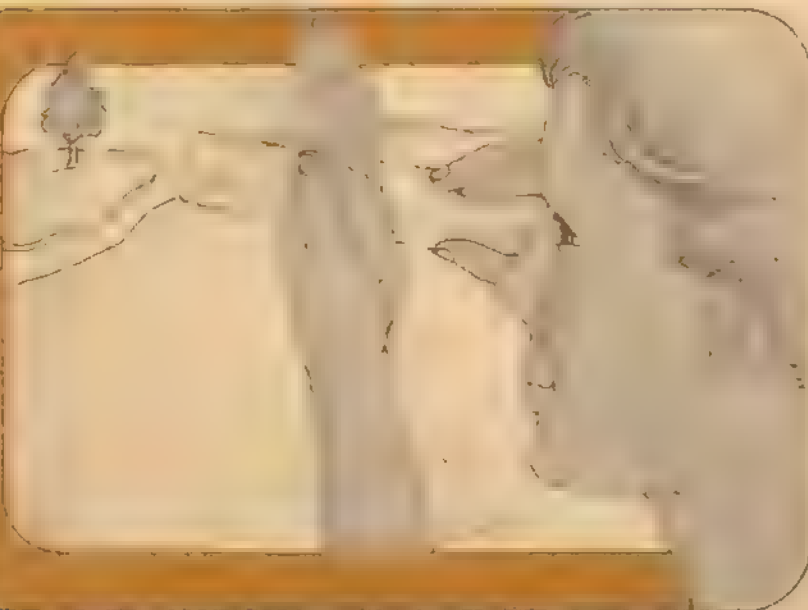
What really happens is that your iris is covering part of the pupil. When that light went on suddenly, it meant too much light was getting in your eye. Your iris made the pupil smaller. If there is not enough light, the opposite thing happens. Your iris makes your pupil larger, to let in as much light as possible.

3. Roll up a piece of paper into a tube. Pick out an object in the room and stare at it. Hold the tube up to one eye. Now, put your other hand next to it as in the picture. Suddenly, your hand has a hole in it. You can see the object right through it!

When you usually look at something, each eye sends a picture to the brain. Each eye was looking at something different. When your brain put the two pictures together, you were left with a hole in your hand.



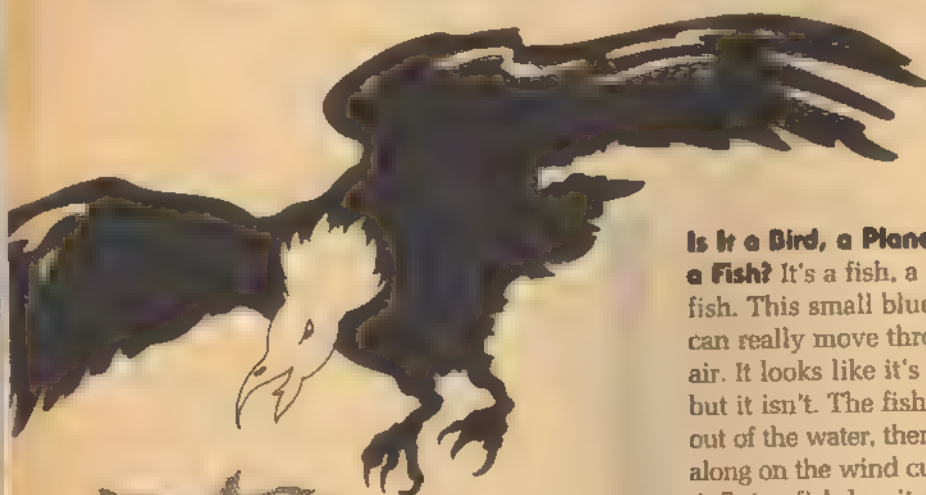
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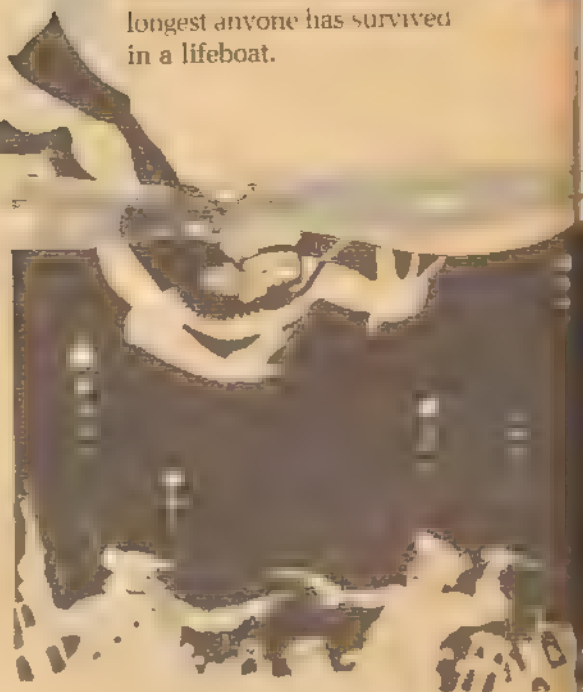
List of the Month

Ocean Wonders

The ocean is so deep and wide that many of its secrets are still hidden. Here are some strange tales and interesting facts about the ocean.



Is It a Bird, a Plane, or a Fish? It's a fish, a flying fish. This small blue fish can really move through air. It looks like it's flying, but it isn't. The fish jumps out of the water, then glides along on the wind currents. A flying fish has it rough. It usually jumps out of the water to escape bigger fish ready to eat it. But once in the air, it must watch for birds with the same dinner plans.



David Feilbrant © 1980

Lucky Fire If you're ever at sea during a thunderstorm, look up. You may see St. Elmo's fire. This bright light can be seen at the top of a boat's mast during storms. It comes with a crackling sound. Both the light and sound are caused by electricity in the storm. Unlike lightning, St. Elmo's fire won't hurt a boat. In fact, sailors say it brings good luck.



High, High, High Tide In most places, high tide at the seashore is about 10 feet higher than low tide. But Canada's Bay of Fundy isn't like most places. Water in the Bay goes up and down by as much as 70 feet (22 m) in six hours!

During high tide, water is pushed into the bay from the Atlantic Ocean. When it does, boats that have been sitting on land during low tide are suddenly floating in deep water again!





River in the Ocean There is a river in the Atlantic Ocean. Its water is bluer, saltier and warmer than the water around it. This "river in the ocean" is called the Gulf Stream.

This famous current sends warm water from Florida up the east coast of the U.S. It almost gets as far as England! The stream moves northeast at about four miles (6.5 km) an hour. Ships use it to get to Europe faster.

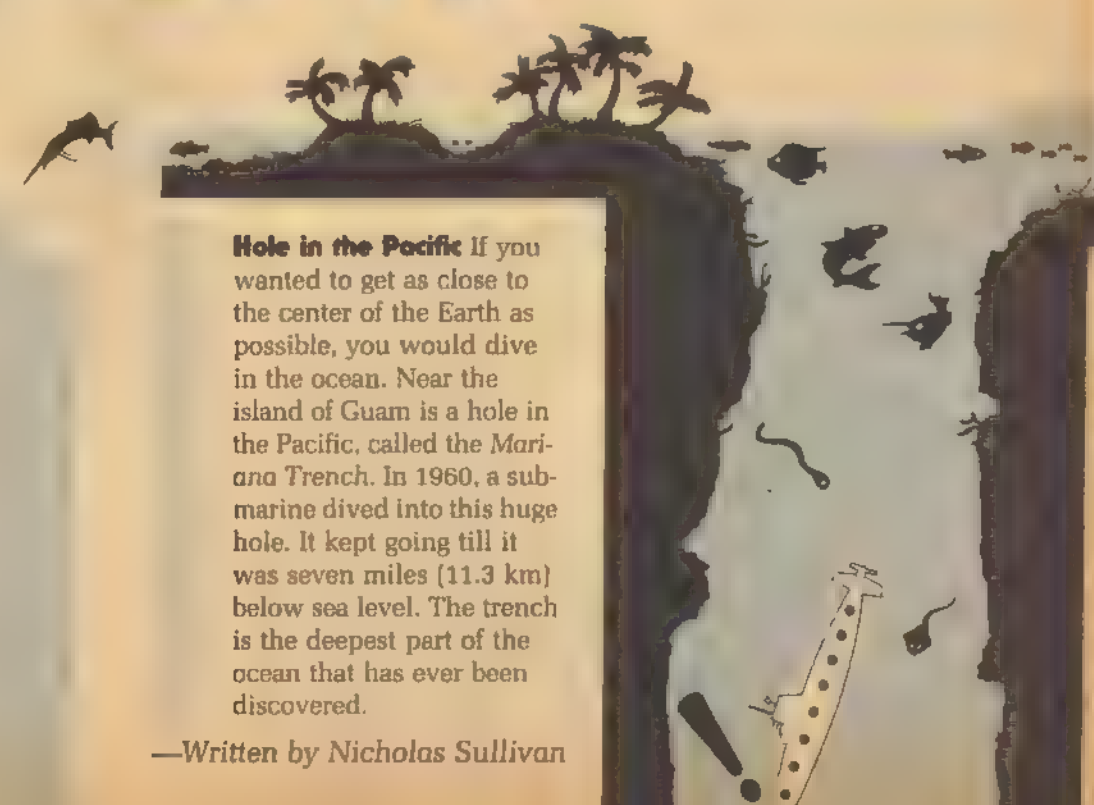


Disappearing Pirates The city of Port Royal was home to many pirates in the 1600s. But on June 7, 1692, this city on the coast of Jamaica disappeared. That morning, an earthquake shook the town into the ocean. For centuries it lay hidden. But in 1956, Port Royal was discovered again. It was found, buried beneath sand and water, by deep sea divers. Today they continue to search for the pirate treasures of the city.



What, More Cabbage?

Captain Cook was an explorer who sailed around the world three times. He lived in the 1700s. Back then, sailors often died from a disease called scurvy. On Cook's second voyage, he found that eating cabbage prevented scurvy. (Actually, it's the vitamin C in cabbage that does it.) So every day, like it or not, everyone in the crew got a plateful of cabbage from Captain Cook's cook.



Hole in the Pacific If you wanted to get as close to the center of the Earth as possible, you would dive in the ocean. Near the island of Guam is a hole in the Pacific, called the Mariana Trench. In 1960, a submarine dived into this huge hole. It kept going till it was seven miles (11.3 km) below sea level. The trench is the deepest part of the ocean that has ever been discovered.

—Written by Nicholas Sullivan

Contact

Sugar Babe There are dolls that walk, talk and cry real tears. Now there's one called Sugar Babe that helps children with diabetes learn to take care of themselves.

Diabetes is a disease. People with it have too much sugar in their blood. To treat this, they must give themselves a daily shot of a medicine called insulin.

Most kids hate getting shots. Lori Needleman, who has diabetes herself, invented Sugar Babe. She hopes children will lose their fear and learn to give themselves injections.

Sugar Babe has soft skin that can be pierced by a needle. Rows of red dots on its arms and legs show the right places for injections. By practicing with Sugar Babe, children learn to treat themselves.

"Playing with the doll," says Mrs. Needleman, "children learn diabetes is nothing to be ashamed about."



Sugar Babe helps kids with diabetes.



Scientists are tuning in to alligators.

How Your Lizard, Alligator When Norbert Smith was a boy, he would catch lizards, snakes and toads. Today, he's a scientist, but he's still catching animals. Now he learns a lot more about them—thanks to radio telemetry.

An animal is brought to Dr. Smith's lab. Next, a tiny transmitter is put into its body. Then the animal is returned to the wild.

The transmitter sends the electronic signals from the animal's body back to the lab. "It's like an animal carrying a CB or a walkie-talkie," Dr. Smith says.

Dr. Smith gets important information about the animal. For example, most animals' hearts speed up when they are frightened. But Dr. Smith found that an alligator's heart slows down. It slows from 25 beats a minute to just two a minute! He's not sure why this happens. But by staying tuned, he hopes to find out.

—Written by April Koral

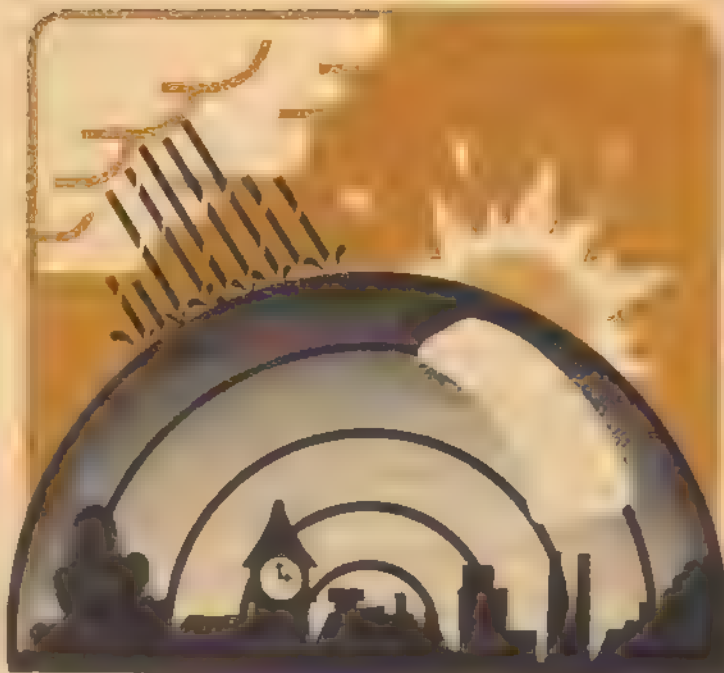
Report

The Big Cover Up What would it be like to live under a giant see through umbrella? The people of Winooski, Vermont, may find out one day. They are thinking of covering their small city with a dome one mile long and 200 feet high!

Living under a plastic dome would mean never worrying about rain or snow. But that's not why the Winooskians want to go "undercover." A dome, they hope, would keep the city warmer in the winter. This would save energy.

There are still many problems that must be solved. How would they handle air pollution? Where would people get in and out? The city has already asked the government for money to help find answers to these questions.

The people of Winooski haven't forgotten that it's nice to see the sky. Says one town official: "We'd like to find out if the dome could open up—for sunny days." —Written by April Koral



A town in Vermont may soon be "undercover."



Two eggs for the price of one.

Egg Yolk! Jim Dietz of Newbury, Ohio, got a real surprise recently when he broke open an egg to make breakfast. There inside was a yolk plus another whole egg, shell and all!

An egg starts in a chicken's body as just a yolk. When the yolk grows to the right size, it passes slowly through a funnel in the chicken's body. Along the way, the yolk is surrounded by egg white and then by a shell. By the time the egg has reached the end of the funnel, it is ready to be laid.

In the case of Jim Dietz's egg, a strange thing happened. For some reason, the egg returned up the funnel. While it was there, a second yolk entered. The old egg and new yolk were then put into one shell. And Jim Dietz got two eggs for the price of one!

Based on story sent in by Beth Suing, Chesterland, OH.

Where's That? Have you seen a story in a newspaper or magazine that belongs in the Contact Report? Why not cut it out and send it to us? Be sure to include your name, age, address and the place you found the story. Send it to:

The Contact Report

P.O. Box 2935

Boulder, Colorado 80322



Dolt!

Word Hunt:

Star Wars

Hidden here are 14 words that have something to do with *Star Wars*. Find the words that are listed below in capital letters. They are hidden across, up and down and diagonally. Some of them are backwards. May The Force be with you!

Artoo-DETOO	Luke SKYWALKER
CHEWBACCA	Millenium FALCON
DEATH STAR	Obi-Wan KENOBI
DARTH VADER	Princess LEIA
DROIDS	The FORCE
HAN SOLO	TIE fighter
JAWA	Uncle OWEN

D	E	T	O	O	X	C	H	E	W
E	A	C	L	E	I	A	A	P	S
A	C	R	O	I	B	O	N	E	K
T	C	O	T	T	H	E	S	C	Y
H	A	F	W	H	W	N	O	R	W
S	B	Y	A	O	V	X	L	O	A
T	W	K	J	A	W	A	O	F	L
A	E	S	D	I	O	R	D	W	K
R	H	F	A	L	C	O	N	E	E
H	C	K	E	N	O	S	K	Y	R

Star Tracks

Trace a line through each star, starting at the top big one. You must end up at the bottom black star. Use only vertical and horizontal lines and don't lift your pencil from the paper. You must pass through every star once, without crossing the lines you've drawn.



Toothpick Fish

Arrange 8 toothpicks to make this fish. Add a button for the eye. Now make the fish swim in the opposite direction by moving the button and 3 of the toothpicks.



Answers on Page 46

THE ROBOT HALL OF FAME

By Brad Gabbis

THE BEST OF THE MOVIE MACHINES



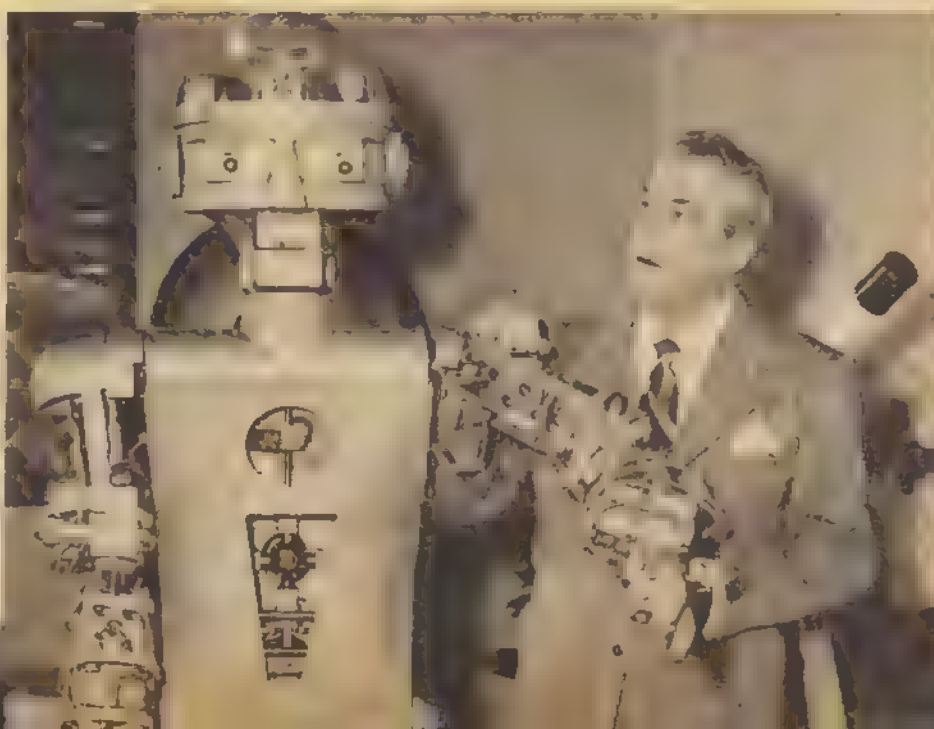
You may not know it, but there is a robot in your oven. Inside is a gadget called a *thermostat*. This machine controls the oven's temperature and can be thought of as a simple robot.

Of course, no one is going to make a movie about your oven. Movie robots are usually cute little sidekicks or evil villains. That's what people want to see.

Since the beginning of movies, there have been machine-like people in them. At first, they were mostly frightening. Maybe it all began with Frankenstein's monster. Was it a robot? Sort of. It was made of spare parts and brought to life with electricity. Peo-

Above: Evil robots were the newest thing in 1930s movies. This one is pushing around space hero Flash Gordon.

Right: Sometimes real robots showed up on TV, like Garco, who was built by U.S. scientists in the 1950s.



ple thought the monster was evil. The lesson of the story seemed clear. Don't mess around trying to make artificial human beings!

For many years, robots remained bad guys. The first real "good" robot was named Robby. He became a star in the 1950 movie *Forbidden Planet*. Robby was so popular he made two more movies.

Finally in the 1970s, heroic robots popped up everywhere. Now it seems like you can't make an outer space movie without a cuddly robot or two!

It's about time that all robots—good and bad alike—get their own Hall of Fame. On the next few pages, you'll find some of the best and worst robots in movie history.

Right: Robby was the first friendly robot in the movies. He starred in the 1950 film, 'Forbidden Planet.'



Below: In the 1973 movie 'Sleeper,' Woody Allen disguised himself as a robot butler.



Above: Outside, it looked like a man. But inside, this robot from the movie 'Westworld' was all nuts and bolts.





Above: 'Galactica' also had the first robot dog, called Muffit II.

Left: 'Battlestar Galactica' had TV's flashiest villains—the Cylons.



Left: Spunky V.I.N. Cent was the real star of 'The Black Hole.' Here he shows astronaut Harry Booth he's a friend you can lean on.



Above: Pint-sized robot Twiki is TV's Buck Rogers's sidekick and helper in the 25th century.

Right: Of course no Robot Hall of Fame would be complete without the brightest stars of 'Star Wars'—C3PO and R2D2.



Below: This tough-looking robot was one of the characters in the 1975 movie, 'Logan's Run.'



Timeline



The first kites were flown 5,000 years ago.

History of Kites

Past

No one knows for sure when kites were first built. Many experts think people flew the first kites about 5,000 years ago in the southwest Pacific. Others think that China was the birthplace of kites.

The ancient Chinese flew kites for fun. They held many festivals. After a while, kite flying became too popular. People were out flying kites when the farms needed tending. Because of this, the festivals had to be banned!

In more modern times, kites have been used in many different ways. Would you believe a kite once helped build a bridge? In 1848, a bridge to be built across the Niagara Gorge between the U.S. and Canada could not be started. The water was too rough to get an important cable to the other side. So a contest was held to see who could fly a kite, with a rope attached to a cable, across the gorge. A young boy, Homan Walsh, won the contest and a \$10 prize.

About 80 years ago, Orville and Wilbur Wright discovered that a kite could lift a person off the ground. In 1903, they turned a box kite into the world's first airplane.

Present

Kites have come a long way. Built with new materials, like fiberglass and plastic, kites have been made to fly higher and last longer than before.

Kites are still being used in many different ways. Weather kites, for example, can measure the speed and direction of the wind. Very large kites are sometimes flown behind helicopters to carry cargo. Huge kites are also flown by teams in kite flying contests. A giant kite is strong enough to surprise a group of 15 people by lift-

ing them off the ground.

The largest kite ever was built in Japan in 1936. It was made of 3,100 panes of paper and weighed 19,000 pounds! The record for the highest kite ever flown was set in 1967. Philip and Jay Kunz of Wyoming flew a kite 28,000 feet in the air. That's more than three miles.

But the best thing about kites is not that you can tell which way the wind is blowing or set a world's record. The best thing about them is that they're fun to fly on a sunny day in the park.

Timeline



Today, kites come in all shapes and sizes.

Timeline



Future

What will kites be used for in the future? Will someone figure out a way to use them to help solve the energy crisis? Maybe they will help explore space, or be used for sending messages? One thing is for sure. Kites will come in every size and shape imaginable.

Here's your chance to design the kite of the future. Draw a picture of it here. Be sure to tell

us what your kite can do. Then send it to us, along with your name and age. We will print our favorites. Send your kite to:

Timeline: Kites
3-2-1 CONTACT
P.O. Box 2935
Boulder, CO 80322

Experiment

Eye Fooled You!

You can make your eyes play tricks on you. Try building the four eye-foolers on the next page.

What You Need

Scissors, tape and a sharp pencil.

What You Do

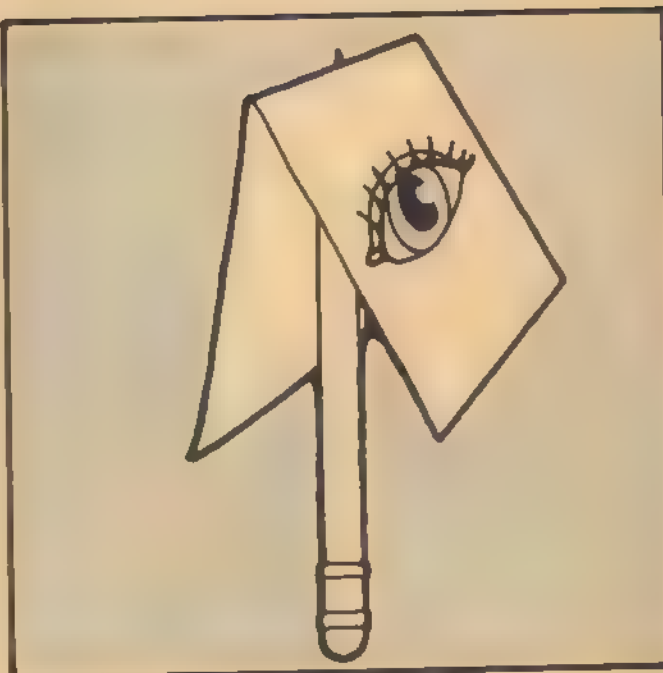
1. Cut out the paper strip on the other page that has two birds on it. Cut along the cut lines. Carefully fold the strip in half along the fold line.
2. Poke the tip of the pencil through the center of the fold line, as in the picture. Now tape the bottom of each side of the picture to the pencil.
3. Twirl the picture back and forth between your fingers, as in picture #2. What do you see? Try twirling the pencil slower and faster. Does that make any difference?
4. Make the other three eye-foolers the same way. See how well you can get them to work.

Why It Works

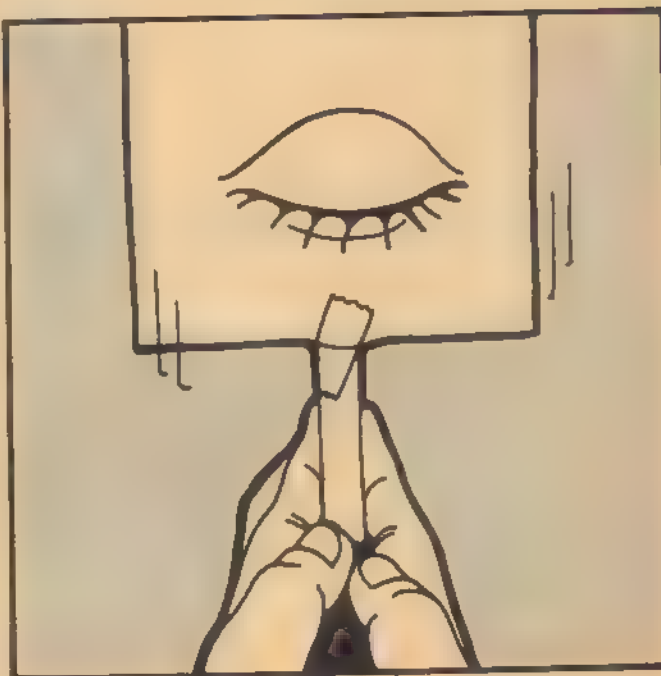
When you spin the pictures, your eyes cannot keep up. The result is an optical illusion. Your brain is still remembering the first picture, when the second one comes around. Instead of seeing the two separate pictures they are combined. It almost seems like they are moving.

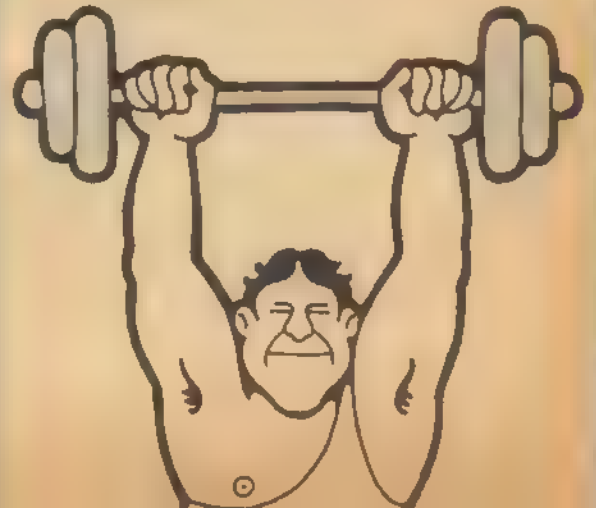
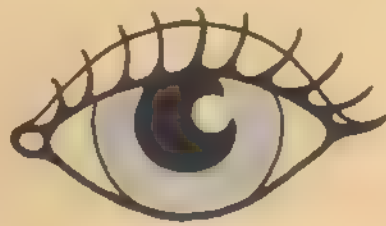
The same things happen when you go to the movies. When you watch the screen your eye sees 24 separate pictures every second! Each picture is a little different from the one before. Your eye cannot keep up with the pictures. Your brain mixes them together and it seems like they are moving.

1



2





Reviews & Previews

UFOs? In the 1977 movie *Close Encounters of the Third Kind*, only star Richard Dreyfuss got to see inside the visitor's ship. Now you can get a peek inside, too! *Close Encounters* is being rereleased this summer with 20 minutes of new scenes added in. You'll be able to see the new, improved version in August.



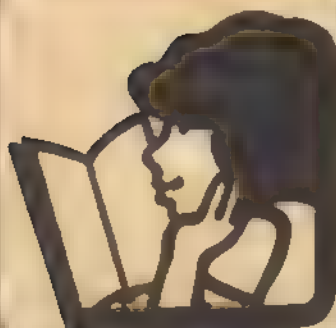
Movie

Oceans Marine scientists study the animals and plants in the ocean. They work on ships that travel all over the world. Sometimes they even live in laboratories under the sea. Do you want to find out more about being a marine scientist? Read *Jobs in Marine Science* by Frank Ross, Jr. Lothrop, Lee & Shepard Company publishes it and you can find it in a bookstore or library.



Book

Eyes Have you ever wondered what makes some people's eyes brown and some blue? Or why sometimes your eyes fool you and make you "see" things that aren't really there at all? You can find out about all of these things and more in *Your Eyes* by Irving and Ruth Adler. It's published by the John Day Company. You can find it in libraries and bookstores.



Book

Flowers You can learn how to make beautiful gifts and decorations out of dried flowers in Joella Cramblit and JoAnn Loebel's book *Flowers Are For Keeping*. It shows you how to dry and press your own flowers and make everything from flower baskets to wallhangings with them. This book is published by Julian Messner. Look for it at a library or your local bookstore.



Book

Trick Does your breath have more power than your friends'? This trick will make them think so. Roll a piece of aluminum foil into a ball one inch across. Drop it in a funnel. Ask friends to blow it out. They can't. Now you blow and it pops out. What's the trick? Just cover the hole at the bottom of the funnel with your finger. It works every time.



Something to Do

Rockets Ever wish you could crawl inside a rocket and have a look around? You can at the National Air and Space Museum in Washington, D.C.

Spend a day at this museum and you will learn about everything from kites to spaceships. You can walk inside Skylab and see how astronauts lived and worked in space. Or push a computer button

continued below



Something Free

Swimming Summer is almost here and that means it's time for swimming. Whether you swim in a pool or an ocean, you have to be careful. For tips on swimming safety, send for "Have Fun But..." To get it, write a postcard to:
American National
Red Cross
National Headquarters
Washington, D.C. 20006



Museum

Sunken Treasure

The famous ship Titanic sunk in 1912 during its first trip across the Atlantic Ocean. In a new movie called *Raise the Titanic*, a group of scientists try to bring it up from the bottom of the ocean. Do they succeed? Find out by seeing the movie. It opens in August.



Movie

and find out what flying will be like a hundred years in the future. If you get tired of running around, sit back and watch a movie on the largest screen you'll ever see!

Don't worry if you can't get to the Air and Space Museum. There are a lot of other great museums. Visit one near your home and write us about it. We might feature your museum review in a future issue of CONTACT.

Talk Back to Your TV

By Carol Mithers

Ever wish you could choose what programs were on your TV set? You may be able to, sooner than you think!

In most cities, if you talk to your television, people will think you are very strange. In Columbus, Ohio, it's perfectly normal. People in Columbus have two-way TV. They talk to their TVs all the time. What do they talk about? The weather? What kind of voice does a television have?

Well, it doesn't work quite that way. Two-way TV doesn't mean your TV set magically comes to life. You can't really chat with it. But you can send a message through it. That's why it's completely different from any other kind of TV you've ever seen.

Two-way is part of a big, special TV system in Columbus. It's called QUBE. It has been in Columbus for about three years. Because of QUBE, many kids in Columbus get to see shows that you don't. Some of these shows use the two-way system. When they do, kids at home get to be part of the show. What shows do they see? How does it work? Like this:

How It Works

QUBE works a little like cable TV. Signals are sent from the TV station to your home over wires. These special wires can also take messages from your home to the TV station. That's why QUBE is called two-way.

People whose TV sets are connected to QUBE have a black box, which is separate from the TV. It looks like a big remote control. It has 35 buttons on it. Thirty are for picking channels, just like regular TV. The five on the right are called response buttons. They're for—you guessed it—responding. They let you talk back to your





RELATIN





Above: QUBE is simple to use. The black box connects right to the TV.

Right: The QUBE box has five "answer buttons" at the far right.

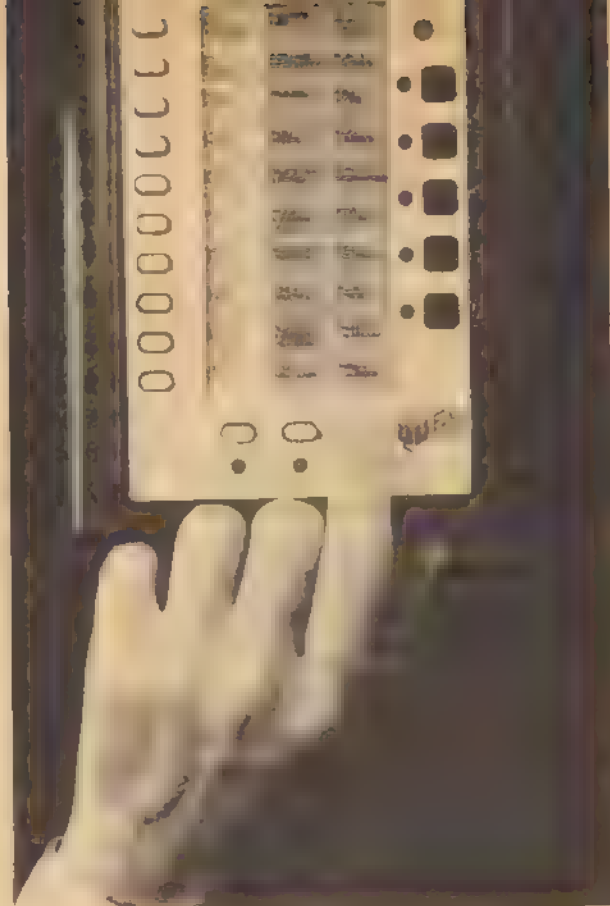
TV. Press a button and an electric signal is sent to the TV station. This way people at the TV station can find out what people at home think about something.

You're Part of the Show

The shows that come over two-way need the audience. For a while, Columbus had its own "gong show." Local people came on the show and did acts. Kids did, too. They sang and tap-danced and twirled batons. It was the people at home who decided what acts they wanted to see. They pushed their buttons. People at the studio then knew who the audience wanted "gonged."

For a while kids in Columbus had a whole special show called *Short Circuits*. The show starred Lester, a warehouse custodian, and his friend, a computer. The two of them solved problems—with the help of the TV audience. They did math problems, where kids at home could push the button that stood for the right answer. Sometimes they chose names for pets. They also helped out a crazy professor on the show who invented things but couldn't decide what they were for!

Last spring there was a special QUBE. A songwriter came to the studio. He gave kids a choice



of things they'd like to hear a song about. When the kids pushed their buttons, he knew what they wanted to hear. And he wrote a song for them—right on the spot!

Shop on TV?

Gong shows and songwriting are only a couple of the ways to use two-way. It can be used for voting. By taking a poll, QUBE might give the answer to local problems. For example, the people of Columbus could be asked, "Do you think we should have a traffic light at the corner of 4th St.?" When people at home pushed their buttons, the question would be answered right away.

There are other surprising uses for QUBE. Someday it could be used for shopping. Imagine sitting home and punching a button to order something from a local store. Sounds crazy, you say? But just a few minutes ago, you thought just the idea of talking to a TV was weird!

So now you want to know when the rest of us are going to get in on the QUBE action. Well, it looks as if Pittsburgh will be the next city to have a QUBE system. The rest of us will have to wait a little longer. One thing seems for sure, though. We won't be waiting too long. Someday you, too may be talking to your TV. And it's going to be talking back!



Pocket Zoo

Animals of the Amazon by Candace Early

This month's animals live in the Amazon jungle of South America. Located around the Amazon River, this tropical rain forest is very hot and humid. It rains almost every day of the year. The temperature is always over 80°F (27°C).

The animals of the Amazon jungle have gotten used to the hot, wet days there. In fact, most of them could not live in cool, dryer places.

How to Make Your Pocket Zoo

To make your animal cards, you need scissors, 4"x6" index cards (or pieces of cardboard the same size) and some sticky stuff.

1. Cut out your six animal cards along the dotted lines.
2. Paste or tape the animal to one side of the index card. Do this so that the information about the animal hangs over the side. (picture below)
3. Now fold the flap with the information so that it is on the back of the card. Glue this side, too.
4. Use the extra space on the back for anything else you might want to write about each animal. Your pocket zoo is ready.





Toco Toucan

(TOE-coe TOO-can)

Category: Bird

Size: About 25 inches (63 cm) tall.

Weight: About 7 pounds (3.2 kg).

Length of Life: Up to 50 years

Home: They nest in tree holes

Food: Fruit, large insects and baby birds.

Fact: Its bill is as big as its body though it only weighs a few ounces. It was developed over the years for eating large fruits.

Scientific Name: Ramphastos toco



Anaconda

(ANN-nuh-CAHN-duh)

Category: Reptile

Size: About 18 feet (5½ m.) long.

Weight: Up to 200 pounds (91 kg.).

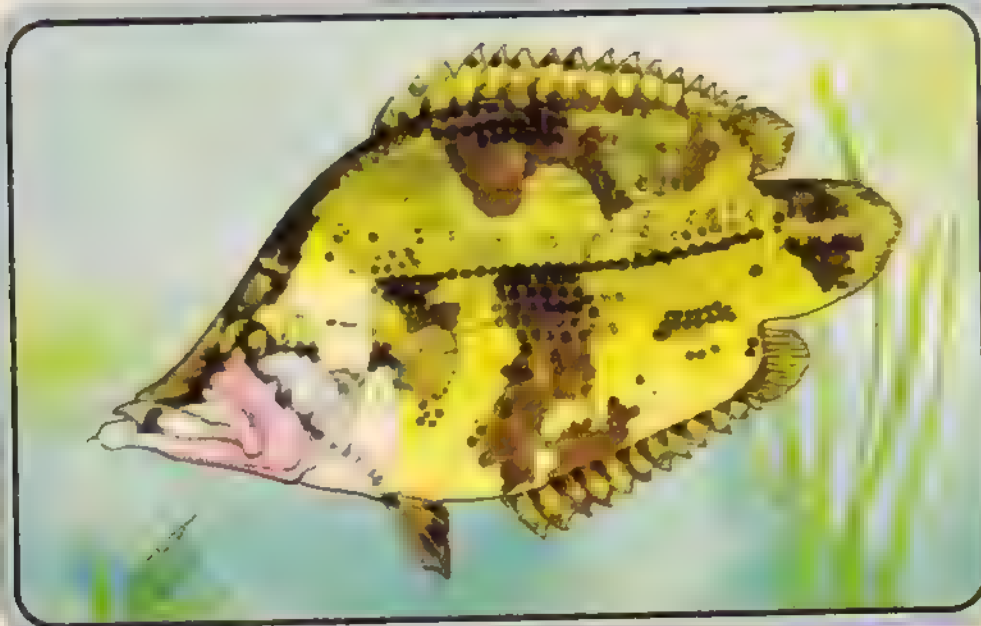
Length of Life: Up to 20 years in captivity.

Home: Swamps and streams.

Food: Small alligators and different kinds of water birds.

Fact: An expert swimmer, this snake prefers water to land. It kills its food by squeezing it to death.

Scientific Name: Eunectes murinus



Leaf fish

Category: Fish

Size: 4 inches (10 cm.) long.

Weight: About 1½ oz. (42 g.).

Length of Life: About 3 years

Home: The Amazon and other rivers.

Food: Fish smaller than itself, which it swallows whole.

Fact: Leaf-shaped, it lives in the quiet parts of a river, where leaves collect. To hide from its enemies, it turns the color of the leaves around it.

Scientific Name: Monocirrhus



Red Howler

Monkeys

(HOWL-er)

Category: Monkeys and Apes

Size: Head to tail, about 7 feet (150 cm.) long; its tail is half of that length.

Weight: About 17 pounds (8 kg.).

Length of Life: About 4 years.

Home: It lives in trees.

Food: Leaves, fruits, nuts and seeds.

Fact: The red howler is a fitting name for this monkey. It makes a noise that can be heard three miles away.

Scientific Name: *Alouatta seniculus*



Jaguar (JAG-waar)

Category: Cat

Size: About 8 feet (2.4 m.) from the tip of its nose to its tail.

Weight: About 200 pounds (90 kg.).

Length of Life: 20 years (in captivity).

Home: The jungles of South and Central America.

Food: Deer, monkeys, birds, fish, turtles, alligators and crocodiles.

Fact: A very strong cat, it can kill a horse and drag it away to eat it. It is also a good swimmer and climber.

Scientific Name: *Panthera onca*



Sunbittern (SUN-bit-tern)

Category: Bird

Size: 18 inches (45 cm.) long.

Weight: About 5 pounds (2.3 kg.).

Length of Life: Unknown.

Home: Nests of dry leaves that it builds in small trees.

Food: Frogs, water insects, snails, crabs and fishes.

Fact: To catch food, the sunbittern moves very slowly, wading through shallow water. In a flash, it sticks its bill into the water and snatches lunch.

Scientific Name: *Eurypyga helias*

Any Questions ?

by Joanna Martin

Why do some flowers smell sweet while others don't? People use perfume to smell sweet and attract other people. Flowers also smell sweet to attract. But they're looking to gain the attention of honeybees!

Bees and other insects are drawn to sweet smelling flowers. There the bees find pollen and nectar they use to make honey.

Why go to all that trouble to attract a bunch of bugs? For many flowers, a visit from a bug helps make its seeds fertile. Bees carry pollen. Pollen from one flower makes another flower fertile. Now when its seeds fall to the ground, they will produce new flowers.

Some flowers, like snapdragons, don't need bugs to make their seeds fertile. So they don't bother with pretty smells and the bees don't bother with them.

Question sent in by Lenore Rogan of Eynon, Pennsylvania.



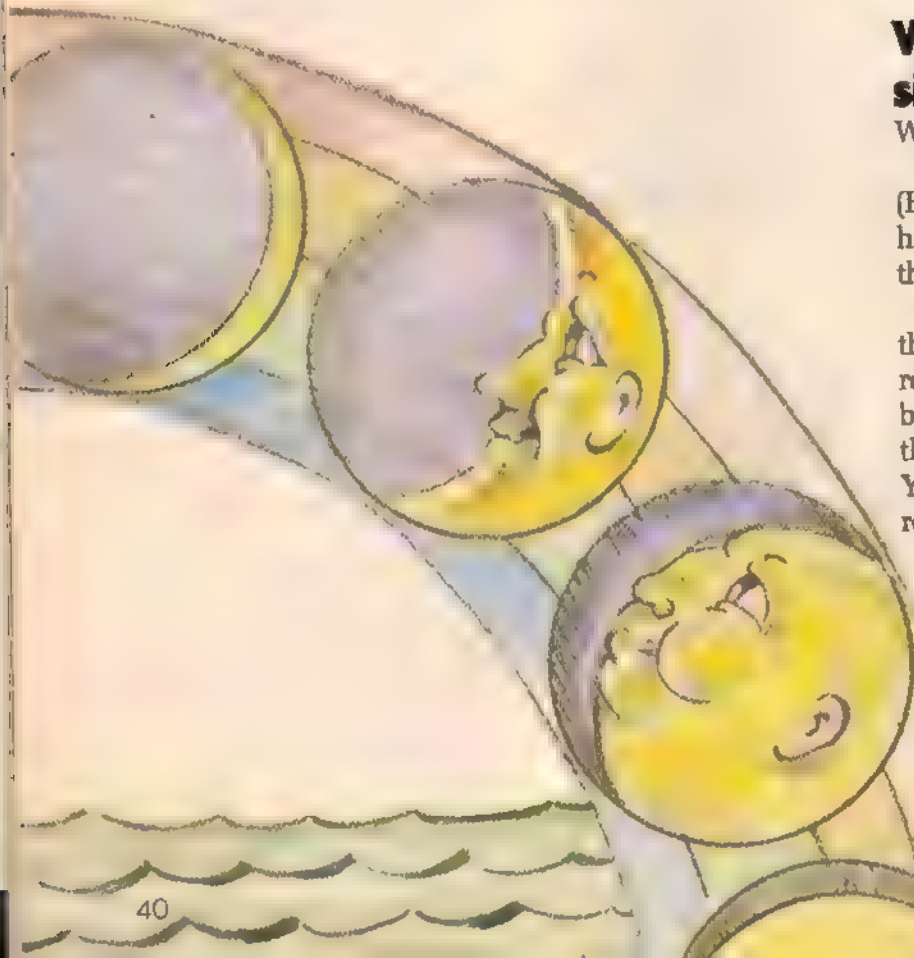
Why does the moon change size and shape? It's not really changing. What is changing is how much of it you see.

The different looks of the moon are called phases (FAY-ziz). They happen because the moon doesn't have its own light. It reflects the sun's light. All the while, the moon moves around earth.

Sometimes the moon is on the other side of the earth from the sun. It gets lots of sunlight to reflect. You see a full moon. Other times, it's between the earth and the sun. The moon side that reflects the sun is facing away from the earth. You can't see it. That's the new moon, which is really no moon at all.

The moon takes about 29 days to travel around the earth. In that time, it goes from new moon to a full moon and then back to new in small steps. Then the cycle begins all over. That's why you see a full moon about once a month.

Question sent in by Barbara Pennell of Poland, Ohio.



Is there something that you have been wondering about, for which you can't seem to find an answer? We just might be able to help. Send your question along with your name, age and address to:

Any Questions?
3-2-1 CONTACT
P.O. Box 2935
Boulder, Colorado 80322

Why does your voice sound different to you than to other people?

Ever hear your voice over a tape recorder? Everyone else's voice sounds great, but yours sounds really strange.

Most sounds travel through the air. Your outer ear catches the sound. It sends the message along to your inner ear and then to your brain. This is sometimes called *air hearing*.

When you talk, you hear the sound of your voice through your bones. No kidding! The sound of your voice comes from inside your body. Bones in your skull pick up the vibrations. They send these vibrations directly to your inner ear. This shortcut is called *bone hearing*.

You usually hear your voice by bone hearing. But when your voice is on a tape recorder, you hear by air hearing and it sounds funny. Everyone else hears your voice through air hearing all the time. So to them, your tape recorder voice sounds normal.



What causes tides?

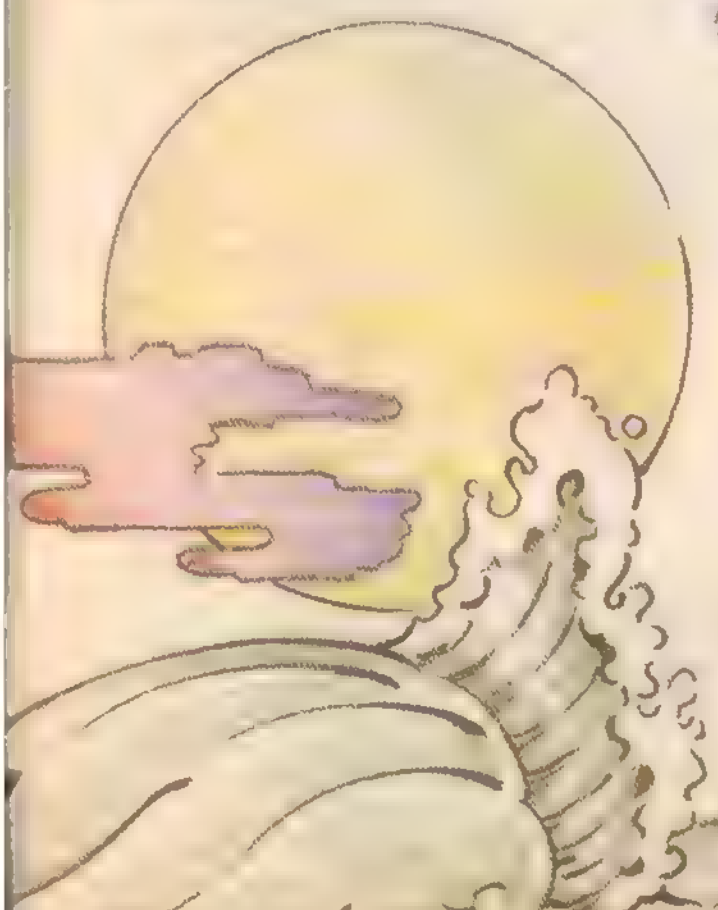
You build a sandcastle at the beach. A few hours later, it's covered with water. What happened? The tide came in, that's what.

Believe it or not, tides are caused by the moon. Its gravity pulls at our planet. This causes the water in the ocean to bulge. This bulge produced the high tide covering your sandcastle.

As the moon orbits the earth, the tides change. The tides go from high to low every six hours. It is always high tide where the moon is closest to the earth and on the opposite side of the planet. Low tide is found where the moon's pull is weakest.

There are many other factors that affect how strong the tides are. The sun, for example, can also make tides. Because it is so much farther away than the moon, its pull is weaker. But, when the sun and moon are pulling together, you get extra high and extra low tides.

Question sent in by Ralph Sharrett, Baltimore, Maryland.

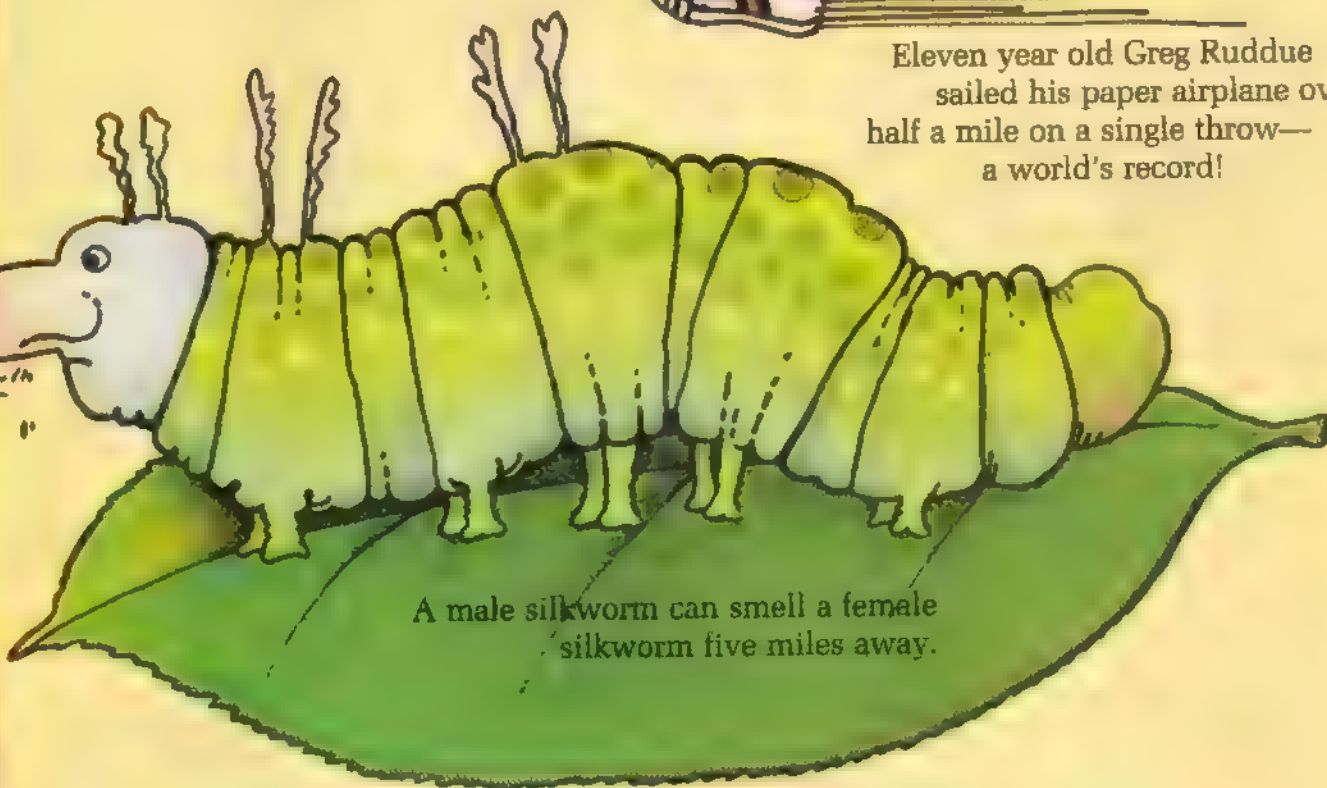


Factoids

What are factoids? They are weird little facts that are stranger than strange, truer than true. Use them to wow your friends, amaze your family and dazzle your teachers.



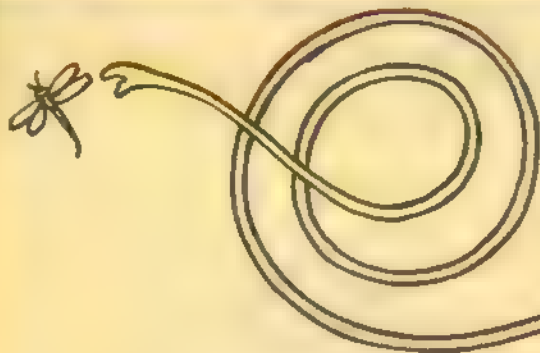
Eleven year old Greg Ruddue sailed his paper airplane over half a mile on a single throw—a world's record!



A male silkworm can smell a female silkworm five miles away.

It takes sounds about five seconds to travel a mile.



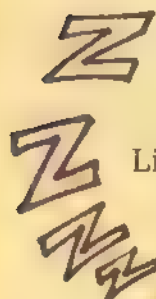
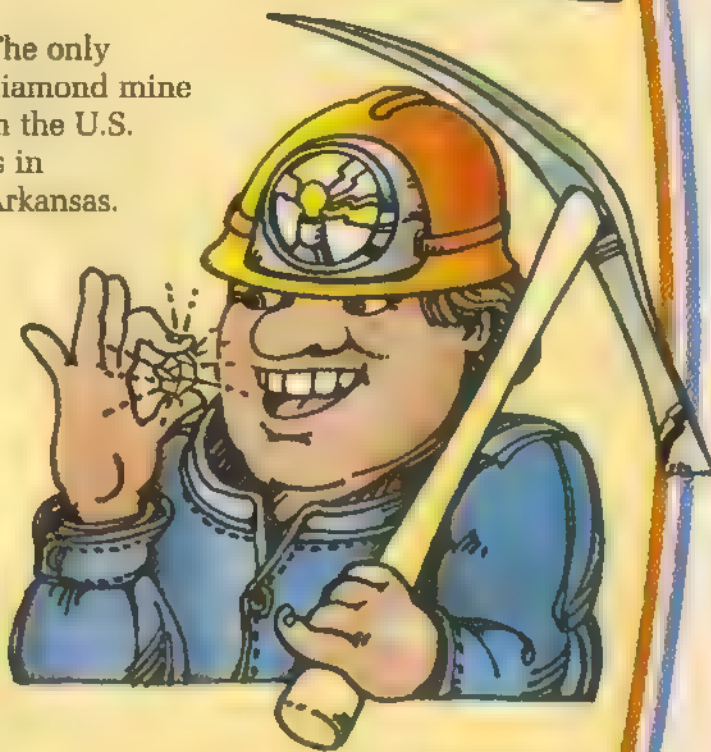


A chameleon's tongue is often longer than its body.



A honeybee's wings beat 200 times per second.

The only diamond mine in the U.S. is in Arkansas.



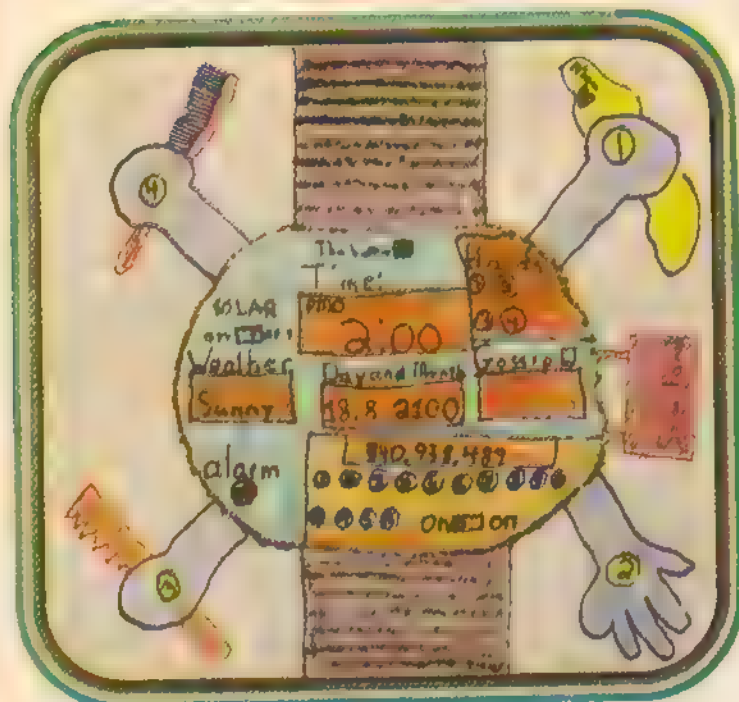
Lions sleep about 18 hours a day.



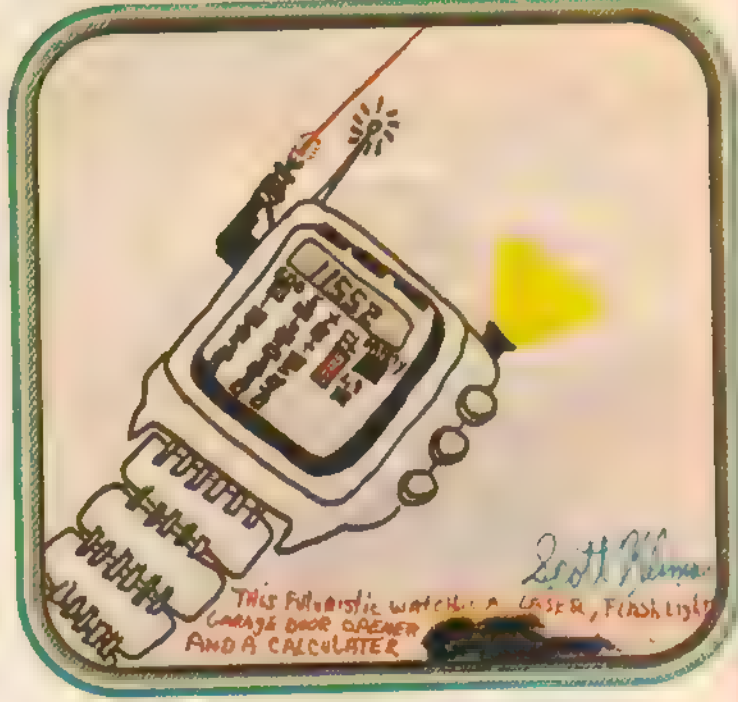
MAIL

Future Watches Thanks to all of you who sent drawings to Timeline. They were great! Below are four of our favorites.

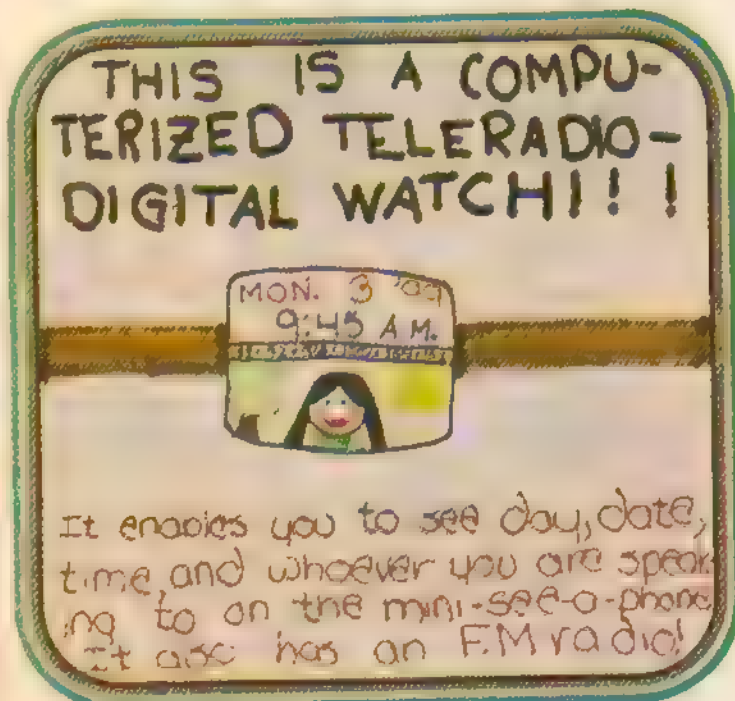
Some others that we liked were sent in by: Damion Searls, New York, NY; Andy Rader and Jason Nyberg, New Berlin, WI; Lynette Gabriel, Beverly, MA; Rodney Chesser, Cuero, TX.



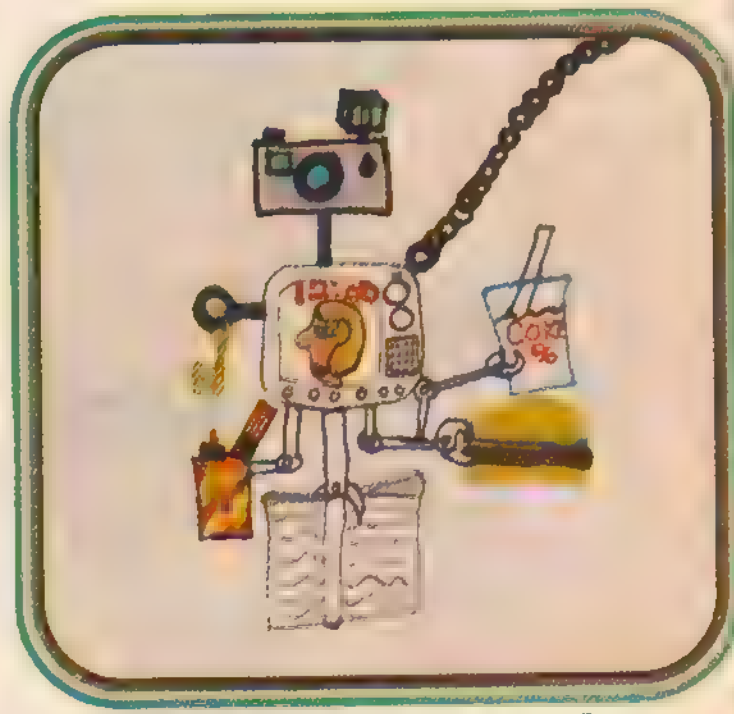
Kerrie Lind, age 11, Spring Valley, California. Kerrie's watch is solar powered. It tells the date, the weather, and all the latest gossip.



Scott Klimas, Avon, Massachusetts. Scott's watch comes with a laser, a flashlight, a calculator and an electric garage door opener.



Martha Davis, Alexandria, Virginia. The mini-see-a-phone on Martha's watch lets you see and talk to your friends.



Laura Ellen Stevens, age 11, Slatington, Pennsylvania. Laura's watch has a TV, lighter, book holder, and camera. It will even fix your lunch.

Enjoy Sesame Street

For Ages 2-6

Entertain with The Electric Company

For Ages 6-11



Sesame Street Magazine — Big Bird and his delightful friends will bring dozens of playful surprises, ten terrific times a year. (It's the entertaining education that Sesame Street does best!) Puzzles, cut-outs, games, A-B-C's, 1-2-3's...there's all the magic of the TV super-series in every colorful issue.



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Enjoy ten colorful issues filled with puzzles, posters, cut-outs, Spidey super stories, jokes...and sunny smiles.

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Best Buy ☐ I prefer 2 years (20 issues) for only \$11.95.

CHILD'S NAME _____ AGE _____

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LIST BILLING NAME AND ADDRESS IF DIFFERENT FROM ABOVE.

☐ Bill me later ☐ Payment enclosed
☐ Check here if this is a renewal

Subscriptions to Canada add \$1.00 per year; other countries add \$2.00 per year.
Please remit in U.S. currency.
Allow 4-6 weeks for delivery.

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BBGCS

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Subscriptions to Canada add \$1.00 per year; other countries add \$2.00 per year.
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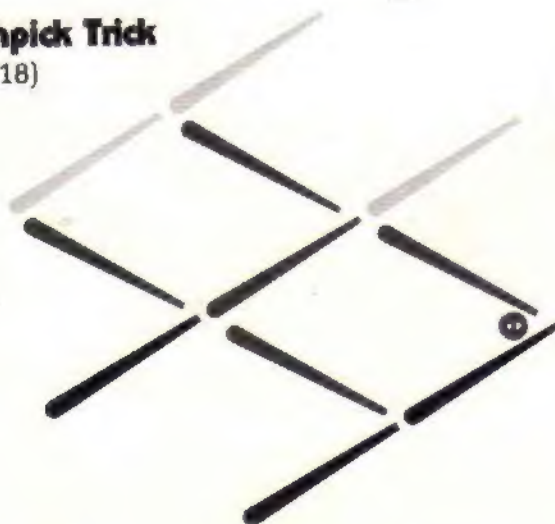
BBGCS

ANSWERS

Word Hunt (page 18)**Star Tracks** (page 18)

Toothpick Trick

(page 18)



Next Month!

Here's some of what's coming in the next issue of CONTACT...

Hello, Summer!

A special 16-page guide to vacation fun.

Sharks

Meet a woman who spends her time with these ferocious fish!

Bicycles

A special "Timeline" for all you pedal pushers out there.

OOPS!

Last month we promised a story on weird food. Hang in there. It's coming next month!

**Plus Factoids, Pocket Zoo, Any Questions
and Much More!**

Credited

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Skyfacts: Saturn

Each month SKYWATCH will bring you a close-up look at another planet or moon. Clip these pages and save them in a notebook. At the end of the year, you will have your own guide to the solar system.

Skywatch



Symbol The sign at the left stands for a sickle, carried by Father Time. It also stands for the planet Saturn.



Size Saturn measures 232,000 miles (373,000 km.) around its equator—almost ten times the length of Earth's equator.



Day A day on Saturn is about ten hours long.

Year A year is 30 Earth years long. In that time, Saturn makes one orbit around the sun.



Temperature It ranges from minus 290°F to minus 170°F (-178°C to -112°C).

Atmosphere Saturn is covered with thick, icy gas made of methane, ammonia, hydrogen and helium.



Surface Like the planet Jupiter, Saturn is mostly ice.



Moons Eleven moons have been discovered around Saturn. One of them, named Titan, is the largest moon in the solar system.



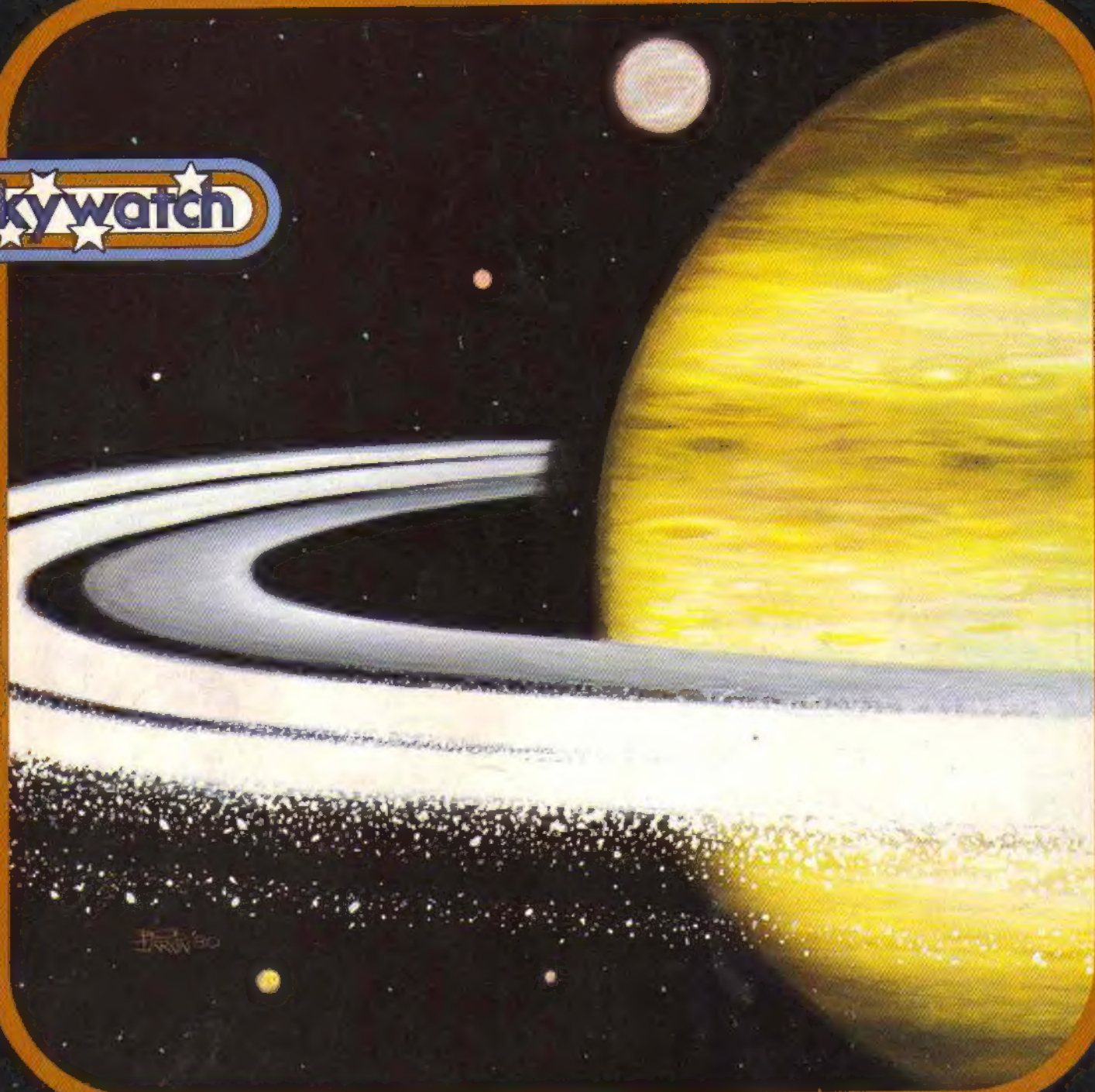
You on Saturn Someone who weighs 70 pounds on Earth would weigh 80 on Saturn. And you? Divide your weight by 7 and add the answer to your Earth weight.



Early Theories When Galileo first saw Saturn in his telescope, he thought he saw "ears" on each side of the planet. It took stronger telescopes to show that the "ears" of Saturn were really rings around the planet. But until recently, astronomers weren't sure what the rings were made of.

Modern Theories Over the past year, scientists have taken a closer look at Saturn's rings. In 1979 a spacecraft flew by Saturn and sent back the first close-up pictures of the ringed planet. Two more outer rings were discovered. Scientists think that the rings are made mostly of ice.

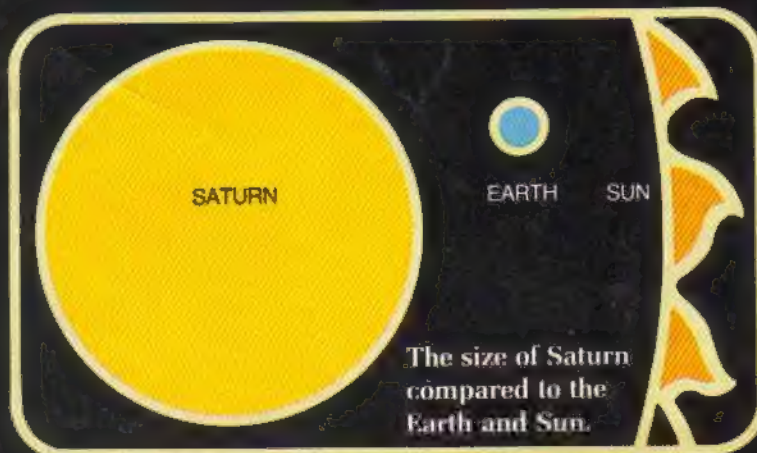
Skywatch



Scientists think Saturn's rings are made of ice.

Focus on Saturn, the Ringed Planet

People of ancient times saw a star moving very slowly in the nighttime sky. They called the planet Saturn, after the god of time. Saturn does move slowly. One year on Saturn is almost 11,000 Earth days long!



Skysight

In July and August, just after sunset, Saturn is in the constellation Leo, moving towards Virgo. It is a point of light low in the western sky.

(continued on page 47)